

ITEMS OF INTEREST.

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ORIGINAL COMMUNICATIONS.

WORK AT COLLEGE.

By a Student.

In reading the February ITEMS OF INTEREST, I noticed an article bearing on the practical education obtained from the dental colleges.

The prosthetic laboratory is fitted with locked desks for about four hundred students, the lathes and furnaces are run by electricity. The soldering table is fitted with numerous varieties of gas burners for heating investments, and compressed air is supplied to take the place of the foot bellows in the use of the blow pipe.

Each student must supply himself with all necessary instruments and materials used in the construction of the different kinds of dentures, bridges, etc.

During our freshman course we were required to make, to the satisfaction of the instructors, one full upper rubber plate; one full lower rubber plate; one partial upper rubber plate of four teeth; one Watt's metal lower; one partial upper metal, four teeth soldered to plate; one full upper metal with rubber attachments; one bridge of one tooth, and one bridge of two teeth with telescope abutments.

As each piece was presented to the demonstrator for final examination and marking, it was either destroyed or kept in his possession till the end of the term. This prevented the same piece from being presented by another student.

In the operative branch we first received a course in the nomenclature and anatomy of the teeth. This consisted in examining teeth that had been extracted, making drawings of the different surfaces, grooves, ridges, etc., and studying the relative positions of the enamel, dentin and pulp, by sectioning the teeth. We were thus able to pick from a number of loose teeth any one, and tell the exact position it occupied in the mouth, where the enamel and dentin were thickest, and how we could cut into the tooth without exposing the pulp.

Then came the preparing of cavities in teeth out of the mouth. We were taught how to shape the cavity, prepare the margins, and secure retention.

Next came the manipulation and use of the different filling materials, including gold, amalgam, tin, cement and gutta-percha, and the use of the different remedies used in the treatment of various diseases; also, how to fill root canals. Toward the end of the term, to put our knowledge to practical test, we were granted a free clinic, with competent demonstrators in attendance, and were allowed to do the work in the mouth as we had been taught to do it in the teeth at our desks.

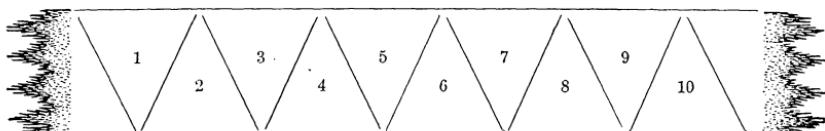
Though it was not compulsory for the freshmen to work in the infirmary, none are passed into the junior class unless their work in the laboratory and operative-room is satisfactory.

In the junior course we have to construct in the laboratory four metal plates, six crowns, and three bridges, and the opportunity of inserting practical plates, bridges, etc.

Great importance is placed on the work done in the infirmary. We have eighty Columbia and Wilkerson chairs, and these are often all filled. We are required to insert not less than ten gold and twenty plastic fillings, each to be marked by one of the demonstrators, first on the preparation of the cavity, and then on the finished filling. This work must all be accomplished before we are advanced to the senior class.

During the last year the greater portion of the student's time is spent in the infirmary, where we are required to put in not less than twenty-five gold, twenty plastic and two porcelain inlay fillings, complete four treatment cases, and construct six pieces of porcelain work. Special attention is also given to the regulating of the natural teeth.

Do you wish to be economical? Then cut your rubber-dam as per illustration :



It will make just twice as many pieces. Cut in this way it is just as wide at the top, the point hanging down, to which a weight can be attached, and for the front teeth answers every purpose as well as if cut square.

C. J. Peterson.

A PROTEST.

Dr. W. S. Elliott, Sag Harbor, N. Y.

In view of the too common introduction of cocaine compounds for hypodermic injection in dentistry, I am surprised that the conservative portion of the profession has not ere this raised its voice of decided condemnation. Every real advance in dental medicine and surgery should, of course, be received with favor and encouragement, when based on scientific premises, and in consideration of the welfare and comfort of the patient. Whatever advantage may have been secured by cocaine in general surgical practice, the claims are not applicable to our profession, except perhaps in a minor degree, where its use is limited to external topical application. The frequently occurring injuries reported should naturally deter one from its indiscriminate use, especially since an acknowledged safe anesthetic, if such must be used, is found in nitrous oxid gas. The hypodermic insertion into the gum tissue for extraction is unscientific and unphysiological, and as barbarous a proceeding as one may conceive it to be. Two, three or four injections for the extraction of a single tooth, and these duplicated many times for more extensive operations, is by no means consonant with good judgment or professional responsibility.

Cocaine through direct or reflex influence is determined toward the heart function, and syncope is frequently the result of its administration. This being recognized, the drug is usually associated with some coagulant, as carbolic acid, etc., that such an unfortunate sequel may be averted; but now what is the further attending consequences?—if absorption does not ensue, the tissues involved must eliminate the foreign substance, and this is accomplished through a process of acute sloughing, or a slow degeneracy, accompanied with prolonged tenderness and pain.

The empirical claim of perfect safety is not borne out, for observation and experience lead to opposite convictions; neither can a compromise be accepted by admitting that the injuries are of a minor character, and are more than counterbalanced by the immunity to pain at the moment of the operation; nor by the admission that the individual patient is entirely satisfied with his experience. Even loss of life has been instanced, and in view of the less serious, though unfortunate, sequences, the practice should be discouraged. These cautions are especially directed to the great mass of dentists who are so apt to attempt what they simply read of others doing.

A STRONG BRIDGE.

Dr. C. J. B. Stephens, Great Falls, Mont.

When molars or bicuspids are to be replaced, and would not be plainly in sight, I prepare the teeth or roots as for ordinary cases—swedge and fit crowns. Take an impression, remove crowns and place in the impression, and pour up with plaster and pumice, or some other suitable material that will stand the heat, securing a cast with crowns in place. Then select plain vulcanite teeth, a little smaller than for rubber work, get the circumference of each tooth, with binding wire as a guide for the size of crowns, and swedge a seamless crown for each tooth.

Twist wire about the pins, letting the ends project two inches from the tooth, and press the tooth, face down, deep into moldine. Then withdraw the tooth by use of the wire, and place over this mold a small rubber hose, one-half inch long, and pour with Mellott's metal, thus securing a die representing the cusps and buccal surface of the tooth. Place the crowns on a block of lead, and drive the die well inside to stamp the cusps and form the buccal contour. Remove the die, and press or gently tap the tooth firmly inside the crown, and mark with an instrument where to cut away the metal to expose the porcelain, leaving the cusps and edge of the tooth covered, so that the tooth cannot come through this opening. Remove the tooth and cut away the metal, replace again and cut away the surplus metal at the back, and grind both tooth and metal to suit the gums as in articulating. After proper articulation, remove the porcelain and grind a little more from the back to allow for the thickness of backing. Replace the porcelain in the casing and burnish all edges well against the porcelain, articulate and invert for soldering. Before soldering fit inside the casing and against the porcelain a thin backing of pure gold plate or platina and burnish well. Flux and solder crowns, casings, backings and all at once, uniting at all points. After cooling remove from the investment, finish and polish in the usual way. I have used this method for more than a year with the best results. It makes a strong bridge, reinforced at all points, and is easily and quickly constructed. There is less danger of checking the porcelain, and the porcelain cannot leave the bridge.

If a stronger bridge is required secure a die, swedge a piece of metal to fit the cusps on the casing, place and solder before cutting away the casing to expose the porcelain.

BAD REPORTING.

My talk at the Seattle meeting last May will be the death of me, if I see many more extracts published. I appreciate your kindness and appreciation of what I intended to say, but the "report" was the worst thing I ever suffered at the hands of a reporter.

On page 103 of ITEMS I am made to say: "The lingual cusps of bicuspids and molars should be shorter than the buccal." What I did say was just the reverse. What I said in regard to Dr. Bonwill's method is away off.

On page 99 it reads: "I have known instances where the wisdom tooth or second molar stood at an angle of forty-five degrees," but I also said I had seen sets of teeth articulated in such manner that the artificial molar was arranged in direct contact with the face of said lower tooth, and, of course, the result was a constant crowding forward of the plate.

The final paragraph should read: "If the lower plate presses hard at the posterior margin, so as to irritate, secure relief by shortening the bite rather than by filing the plate."

On page 73 I am reported as saying that the retention of the superior cuspids, when all the other teeth are missing, "do not tend to preserve the contour of the lip."

What I did say was: "It was not necessary to retain them for that purpose, because it could be successfully restored by the artificial teeth."

L. P. Haskell.

WRITE PLAINLY.

Dr. Will H. Savage, Clifton Forge, Va.

To those of us who are not leaders of thought in dental science, it would seem that the tendency of teachers and writers is to mystify. Some are like Emerson, they veil their meaning, and to such an extent that, instinctively, we ask, "what on earth has that man been talking or writing about?" In the journals we see these abstruse articles shrouded in almost impenetrable mystery. They are like some ministers who deliver psychological essays, and preach over the heads of their congregation, instead of preaching the plain truth. D. L. Moody, who, perhaps, has touched more hearts and changed more lives than any other man in the pulpit to-day, is the plainest and simplest of them all. The object of these dental articles should be the dissemination of knowledge

among the masses of the profession, yet I believe there are few dentists who read them through carefully and cull any food for thought for practice. This would really seem true when we note that it has been said of a presumably representative journal that it is "too scientific for the average dentist." I recall a prominent dentist, who has had the honor of the presidency of a very noted dental society thrust on him, whose work is not as good as his speeches, and whose speeches would be better if weighted with more common sense in plain English. We ought to be familiar with the origin and formation of the teeth, with electricity, and with the eccentricities of amalgam, but many of us do not like to wade and wade, and translate and interpret, and even then find but few new thoughts. We wish to get at the gist of the matter. Indeed, it may broaden and deepen a man and teach him to think, to read Aristotle, Bacon, Locke, Hume, etc., but this cannot take the place of manipulative ability—the power to do. We need investigators and scientists, but by all means let us have their deductions in simple terms, briefly told; let them search for truth, and as they give it out to us we will accord them all honor and glory if they make it plain to our commoner mentality.

THREE LITTLE HELPS.

H. H. W., St. Thomas, Ont.

1. It is well to keep two mandrels mounted with sandpaper disks, one facing out and the other toward the hand. When changing for a fresh disk simply lock the hand-piece, so that the screw-driver will loosen the screw-head in the mandrel. Then running the engine backward, take hold of the disk and the loose head and run them out at once. When it is provided with a new disk, and run in again by reversing the engine, fasten securely with the driver, and it is done.

2. For convenient undercutting and excavating take two small spoons, right and left and at right angle bend, and grind them down to a flat cutting edge. This leaves two good, sharp corners to reach into the difficult places.

3. For years I have used as a ready enamel breaker a rather broad chisel, with the sides already brought to a good edge. The end-cutting edge I grind out deeply concave. You will be surprised how universally, almost, this one instrument comes into play.

[Let us have such little hints from others.—ED. ITEMS.]

HIS DREAM WAS WORTH MILLIONS.

Elias Howe almost beggared himself before he discovered where the eye of the needle of a sewing machine should be located. His original idea was to follow the model of the eye at the heel. It never occurred to him that it should be placed near the point, and he might have failed altogether if he had not dreamed he was building a sewing machine for a savage king in a strange country. Just as in his actual working experience, he was rather perplexed about the needle's eye. He thought the king gave him twenty-four hours to complete a machine and make it sew. If not finished in that time, death was to be the punishment. Howe worked and worked and puzzled and puzzled, and finally gave it up. Then he thought he was taken out to be executed. He noticed that the warriors carried spears that were pierced near the head. Instantly came a solution of the difficulty, and while the inventor was begging for time he awoke. It was four o'clock in the morning. He jumped out of bed, ran to his workshop, and by nine o'clock a needle with an eye at the point had been rudely modeled.

THE VALUE OF KEEPING ACCOUNTS.

There is no question but that keeping accounts teaches the value of money as nothing else will. When the figures stare us in the face, they make us realize what this or that luxury cost, and what an important place the sum holds in the total amount of money spent. When we add up those long columns of figures that represent household or personal expenses, we are confronted by the fact that there are only one hundred cents in a dollar. Of course we knew that before, but it was a vague, intangible fact. Ten dollars seemed a large sum, full of infinite possibilities. Alas! now it is spent, we rudely awake to the fact that it is only ten times one dollar, and that it has vanished in fifty cents here, a quarter there, two or three dollars on one side, and repeated dimes and nickels on the other. No, nothing so convincingly teaches the great total that small outlays make as accounts.

In household as well as in personal affairs, when the totals of the expenses and money received are balanced and a deficit results, there is no wiser counsellor, no more tactful monitor, than the account-book. There they stand, figures put down by our own hand, and they cannot be gainsaid. In modest homes where ex-

penditure of money must be carefully adjusted, so that the food-money must not encroach on the fuel-money, or the clothes-money borrow from the rent-fund, accounts are of great value. They help to keep a steady balance in the various parts of living, as the phrase is, and to show the small leaks. It is these that are so disastrous to family finances. The large outgoes are considered and planned for, but the little ones are not thought of, and they creep in by singles, couples, and groups, till the family financier cries in alarm, "Where has the money gone?" It is the tiny fissure that, unheeded, scuttles the bravest ship. In large establishments, where there are many servants, large outlay, and bills paid once a month, or once in three months, strict accounts are a necessity to keep expenses within bounds and to prevent heedless waste and dishonesty, for no household is so rich as to bear two sources of leak continually.

In my opinion we have in electrozone an immediate remedy in the treatment of that terrible plague, that unconquerable foe, that scourge of modern times, malignant diphtheria, a disease which robs annually thousands of homes, destroying the innocent idols of a loving mother whose appeals "For God's sake save my child," is still ringing in the ears of the conscientious practitioner.

I repeat, this electrozone is surely and rapidly gaining favor as a substitute for peroxid of hydrogen. In the latter remedy we have a valuable pus destroyer, and one that works marvelous cures in some cases, but is it a germicide in diphtheria? It dissolves the membrane, the off-cast product of exudation. Is the active germ in that patch, or is it in the mucous membrane or sub-mucous coat? If in the latter, does the peroxid penetrate those underlying cells and destroy the germs without weakening the surrounding mucous membrane?

Are not the medical profession daily coming to the conclusion that the peroxid produces a congestion for a considerable distance around the diseased spot, and thereby rendering a suitable soil for the spread of the disease?

My chemical experience confirms this view, and I could, if time would permit, cite many cases where the disadvantages excelled the advantages. For electrozone I would ask a fair trial. It should be classed as a valuable therapeutic agent, as it will not militate against the marvelous theory of the antitoxin advocates who advise their adherents never to trust to it alone.

C. F. Chandler, M.D.

STORY OF RÖNTGEN'S DISCOVERY.

Prof. Röntgen's discovery of the photographic power of the cathode rays was due to an accident. In experimenting with a Crookes tube through which a strong current was passing, but which was covered with a cloth, he happened to bring his hand between the tube and some sensitized photographic paper. Finding lines on the paper for which he could not account, he hunted for the cause, and found that the bones of his hand had been reproduced by the rays from the tube. In repeating his experiments recently before Emperor William, the Wurzburg Professor explained that he had not yet solved the theory of the phenomenon, and called the rays provisionally X rays. In the first experiments the rays did not reproduce objects hidden by solid matter thicker than one inch, but since then Röntgen is said to have obtained pictures taken through aluminum plates a centimeter and a half thick, and also through two sets of books, and at Pesth parts of the human body larger than the hand have been taken.

There is no doubt about the genuineness of the phenomena discovered. Röntgen's photographs have been examined by Prof. Boltzmann, of Vienna, who says the discovery opens up a new epoch in the history of science. The experiments have been repeated successfully, with the same results, by Profs. Klupathy at Budapest, Domalip at Prague, Pfändler, and Czermak at Gratz, and in London. Röntgen says that not only are the X rays not refracted by glass lenses or prisms, or in passing through water, but that they have no influence on the most sensitive magnetic instruments, and develop no heat.

A native of Sweden, awakened from gas anesthesia to find a most realistic dream but a—dream. He dreamed that he had made the journey from Maine to New York by rail, purchased his ticket and embarked on the big steamer, all the incidents of the voyage seeming as real as if they had really happened. He was just stepping off the gang-plant at Stockholm when his head seemed to whirl for a second, and he found himself in far-off America, hanging over the arm of a dentist's chair with his mouth full of blood. The contrast was too much for the poor fellow, and he broke down and wept. His grief and disappointment were great and genuine. Truly

“Be it ever so humble, there is no place like home.”

O. F. Brigham.

THREE GOOD BUSINESS HINTS.

Lloyd's *Commercial Guide* gives the following advice to its readers. Never sign a paper without reading it; and if, after reading, you do not understand it, have it thoroughly explained before you put a signature to it. It is best to get some third person, who is not interested in the matter at all, to explain the meaning of what is not clear, or to point out words that may have two meanings in the document.

Always make a memorandum in your little book of any contract you undertake for money or any agreement to work. It saves much trouble to keep a memorandum book and put down the dates when you either pay or receive money. Whenever money passes on account, set it down. If any money or thing of value goes through your hands, give a receipt for it and make a memorandum. Your receipt settles the amount that passes, and that cannot be disputed. When you pass it to a third party, get a receipt and keep it. This form is as important in the transfer of income, trust money, or valuables among your own family as with other persons.

Never allow a person to do any service for you without first agreeing on the cost to you. This rule, strictly adhered to, will save you many annoyances.

ONE OF THE PRACTICAL SURGICAL APPLICATIONS OF RÖENTGEN RADIATIONS.

Professor Pupin, of Columbia College, in his experiments with X rays, has obtained some striking pictures of the invisible, but the best picture he has yet taken was that of the hand of a member of a big law firm in Wall street. This lawyer, while cleaning a gun two months ago, sent a load of shot into his right hand, rendering it useless and causing him much pain.

Many of the shot were dug out, but the surgeon knew there were still many imbedded in the hand, but he was unable to locate them. On his advice the lawyer went to the laboratory in Columbia College, to have a photograph taken of his hand by X rays, so that the shot in it could be located and cut out. Professor Pupin readily agreed, and for fifty-three minutes the lawyer's hand, strapped to a photographic plate holder, in which there was a sensitized plate, was exposed to the X rays from a Crookes tube, the back of the hand being toward the rays.

When the plate had been developed it was found that there was the merest suggestion of the flesh on the plate, while the bones were pictured as a faint shadow. The buckshot were sharply pictured, and when counted were found to be forty in number. They were imbedded in the flesh and bones of the fingers, but the majority in the bones of the thumb, and all were distinctly visible. On the plate they stood out prominently as dark round spots, perfect in all detail.

COLORED SANDARAC VARNISH.—The formula given in Richardson's *Mechanical Dentistry*, to make sandarac varnish, is five ounces of sandarac to one quart of alcohol. To color add to the alcohol sufficient red analine to give a rich claret color. The advantage of using this varnish on plaster of Paris impressions is that but one varnish is used giving a colored line between the model and impression, and giving a hard smooth surface on which the plaster of the model is poured, insuring a smooth model.

The use of but one varnish saves time. The colored varnish shows distinctly where it is applied. The varnish is used on the surface of the investment in the lower part of the flask, and in such cases it is not necessary to wait for the varnish to perfectly harden, but the investing plaster can be poured on the cast to fill the upper part of the flask in a minute or two after applying, which also saves time.

John G. Harper, D.D.S., St. Louis, Mo.

TO AVOID DARK JOINTS.—A writer in February ITEMS takes a whole page to describe that detestable method of filling the joints with cement, which will disintegrate and leave a pocket for secretions that will shock any decently kept nasal member. Dentists ought to have dark joints and plates discarded, too, if they will not adopt the following absolute preventive: Grind the teeth so the joints are slightly open back, invert, and after scalding out wax, before packing with rubber, pack each joint with a small rope of pure tin foil. I used gold at first, but tried tin with equal success. Have not had a dark joint for thirty years by this method. I use cutting edge of small blade of my pen-knife for packing rope into the joints.

W. W. France, Lincoln City, Del.

LARGE CONTOUR FILLINGS.

We ought to work for our patients' benefit rather than our own glory. I remember some few years ago a lady coming from a neighboring city. She told me she had paid six hundred dollars for having her teeth contoured, and she had not had a comfortable day since, though she had tolerated the work for several years. It was beautifully done, but on frail teeth with roots predisposed to irritation, and while there were no suppurative processes, yet the gums were tender. There were two bicuspids that especially troubled her, and she requested some relief. I took out the fillings and cleansed the devitalized roots. The teeth had been wedged apart previously to contouring, and had not been allowed to return to their normal position. The fillings extended over the faces of the roots so that there was constant impingement of the crowns, one on the other. She said she did not mind the appearance of gold, so the roots were supplied with gold caps, and these she is wearing comfortably to-day.

It is a mistake to keep patients in the chair four, five or six hours, while malleting a gold filling, when we could make a better operation by trimming off the tooth properly and adjusting a collar and a porcelain crown.

One of my patients said, I don't see any necessity for having my teeth fixed, if I am to suffer a penalty equal to death, and she was correct in this opinion. There are dentists who delight in large contour fillings, which so exhaust the patients that they oftentimes are in bed for days.

Where we have a proximal surface of a tooth to be restored, it should be contoured carefully. But where half or two-thirds of the crown is gone it is unjust to the patient to build it up piece by piece.

Dr. Peirce.

A DENTIST'S MOTTO SHOULD BE "CLEANLINESS."—The hands are a great source of annoyance, especially to the mechanical dentist, after working with the vulcanizer and flasks. A good remedy is to keep a box of cornmeal on the washstand. Lather the hands freely with soap and rub with meal, which readily removes all dirt and stains. After this, rub the hands with tincture benzoin, one part, and glycerin, three parts.

Burton L. Thorpe, D.D.S.

SOME USES OF CARBORUNDUM IN OFFICE AND LABORATORY.

H. B. Bartlett, Owensboro, Ky.

Though carborundum has only recently been given to the profession, yet for wheels and disks in lathe and engine, and for strips in finishing off work in the mouth, it is common.

It is valuable, also, in preparing teeth for crown- and bridge-work. By using a small copper disk one-fourth to three-eighths inch in diameter, mounted on mandrel, with the medium grade carborundum powder and a little water, grooves may be cut around a tooth very quickly, and almost as easily as if the tooth were chalk, leaving but little for the incising forceps to do, and with scarcely any pain.

In cutting cavities in artificial teeth this powder, used as described, saves much time for the practitioner. After grinding the enamel with an ordinary stone, the size which it is desired to make the filling, take the small copper disk and powder and cut two grooves for undercuts, holding the disk at different angles for each groove. This makes a very satisfactory cavity, and does it in from three to five minutes.

Thin disks are made for the trade with the powder fused to the metal, but the carborundum soon wears off, making them expensive and unsatisfactory, but by using the powder with a little water an old disk or one cut from copper can be made to last a long time.

It is also helpful in the laboratory. Turn some different sized wheels and cones of wood or cork, coat them with thick shellac, dip in the carborundum powder, and when thoroughly dry they are ready for use.

In the place of sandpaper for finishing up vulcanite or celluloid work this is a quicker method, giving the same results in half the time.

Then in polishing instruments it works wonders. For this use the felt wheels on lathe with the powder and pumace half and half. Carborundum is certainly a useful auxiliary.

Dr. E. P. Beadles, Danville, Va., makes a combination filling with cohesive and non-cohesive gold, using hand pressure entirely, cavity shaped without retaining points. He maintains a perfectly erect position in his operations and never has a backache.

A GOOD IDEA.

A patient of mine, a middle-aged gentlemen, was in danger of losing both upper lateral incisors, the gum and process having receded, leaving the teeth very loose. The centrals were also quite loose. The cuspids were firm. He was very anxious to retain all the teeth in position, they being perfectly sound.

I obtained a good impression of the palatal surfaces of the six front teeth with soft plaster, using a piece of modeling composition warmed and shaped to serve as an impression tray, ligaturing the loose teeth in place.

I filled the impression thus obtained, and over the palatine surfaces of the centrals, laterals and cuspids, and burnished 21k. gold plate, about 26 standard gage, securing as good a fit as possible. These gold backings extended from the gum down to within one-sixteenth of an inch of the cutting edges of the teeth. These were then placed on the model and connected by platina wire, being soldered from one to the other. I connected the cupid, lateral and central on each side. These sections were then placed in position in the mouth and ligatured in place.

Holes were then drilled through the gold backings and into the teeth, two for each one, locating them far enough toward the proximal surfaces and cutting edges of the teeth to avoid all danger of pulp exposure. Pins from old teeth were then placed in the holes drilled in the backings and soldered to them.

Thus I had plates covering the palatine surfaces of the teeth, with pins extending through the enamel into the dentin. These were connected in sections of three each. I then set them with cement, burnishing them well down to the teeth. When finished, it did not show from the front, yet the six anterior teeth were firm, the strong cuspids helping to support their weaker neighbors.

Portland Dentist.

First impressions have great influence in determining character and ability. Therefore much pains should be taken to appear at our best; for say what we will, and complain as we may, most people take us at first sight at what we appear to be. Even our surroundings and associations, and our very atmosphere, are surcharged with what we are. Subsequent acquaintance may vary this estimate for better or for worse, but cannot wholly obliterate it.

CURRENT THOUGHTS.

NITROUS OXID.

Dr. Thomas, Philadelphia.

It is our object to establish the fact that nitrous oxid possesses as true and specific anesthetic properties, independent of the apparent asphyxiating accompaniment, as any of the anesthetic agents now known.

You all know that the two theories are, first, that nitrous oxid produces its peculiar effects by deoxidation of the blood, or by true asphyxia from the want of oxygen; and second, that the anesthetic effects of nitrous oxid are caused by an inherent property of the gas, which is distinct from and independent of the asphyxiating concomitant frequently observed in connection with its administration.

It seems to me that the phenomena which distinguish true anesthesia from asphyxia have not received full consideration, and that their distinctive features and effects are not well understood.

Anesthesia is usually regarded as a condition of artificial sleep; but there may be several ways of producing artificial sleep or unconsciousness, which would not be a state of anesthesia.

From an experience of considerably more than one hundred thousand personal administrations, there is recognized convincing proof that a subject in a state of anesthesia is physiologically in precisely the same state or condition as one in a like degree of intoxication from the effects of the different forms of alcohol, only one is produced by inhalation and the other by alimentation; you have first stimulation and exhilaration, followed by intoxication, unconsciousness, and finally, if pushed to that extent, death as a result. The effects are produced and exhibited in process—first, by sensory paralysis, beginning at the periphery; simultaneously the cerebrum is affected, but loss of upper function or consciousness does not take place till a considerable peripheral anesthesia has been produced. The motor nerves may yet retain their power, without the guidance of volition. Then the motor nerves, and finally the medulla, succumb, when respiration and cardiac force cease. The order of the progressive effects is precisely the same in each.

We have from the different forms of opium poisons, effects exhibited in stupor or unconsciousness, and, finally, death; but no stimulation or intoxication. Similarly, we have like effects

produced by the inhalation of poisonous gases, such as the fumes of sulfurous acid, mephitic gases, and carbonic acid gas. These are narcotic poisons producing their similar effects, one by alimentation, the other by inhalation—the latter carrying with them a degree of asphyxia; but the final results cannot be ascribed alone to the want of oxidation.

Asphyxia produced by the inert gases, nitrogen or hydrogen, or by mechanical obstruction of the air-passages, results in unconsciousness, violent respiratory effort, stertor, muscular twitching, and sometimes convulsions, with death as a final result from lack of oxidation in the circulation. Recovery from the unconscious period being attended by extreme lassitude, and perhaps complete prostration.

While it is true that the asphyxial concomitant is a feature of profound nitrous oxid narcosis—perhaps also of all anesthetic agents—and likewise true that anesthesia is a concomitant of the asphyxial state, it must be borne in mind that the order of appearance of anesthesia and asphyxial symptoms in the two states noted is widely different. As I have before stated, peripheral anesthesia is one of the earliest phenomena observed in nitrous oxid inhalation, while in true asphyxia anesthesia is not produced till de-oxidation of the blood has proceeded to a point of positive danger.

That nitrous oxid is an inert gas so far as its power to support life is concerned, is accepted to-day as a truth, there being no separation of the oxygen from the nitrogen at the temperature of the human body; so that it need cause no wonderment that many accept the theory of its producing its effects by the want of oxidation, for the breathing of pure nitrous oxid unmixed with oxygen or atmospheric air will in some cases produce all the symptoms of asphyxia, such as stertor, constriction of the glottis, muscular twitching, and even convulsions; but here the similarity ceases, for the effects pass away in a phenomenally short time, leaving the patient with no perceptible after-effects of lassitude and prostration, except in very rare instances.

I have recently taken a record in one hundred cases of the time required in my own practice to induce anesthesia, in which there was a judicious admission of air during the inhalation, and they were brought to the operating point of unconsciousness in from thirty-two to fifty-nine seconds. It is clearly shown that the gas possesses true anesthetic properties by its exhibition of exhilaration, intoxication, and unconsciousness; and it is equally true that it will cause symptoms of asphyxia, as shown by cyanotic appearance, stertor, muscular twitching, etc.; but the essential dif-

ference is evinced by the fact that the narcosis of nitrous oxid is capable of extension to the point of surgical anesthesia before asphyxial symptoms supervene; the period of inhalation being so short that the risk of injury from asphyxia is so infinitesimally small that it is hardly worth considering. This is shown by the fact that in this country alone, it is computed that at least nine or ten millions of people have inhaled the gas for oral and minor surgery at the hands of men of all grades of ability, with but three or four deaths resulting. That the gas is a thorough anesthetic independent of the asphyxial accompaniment, is still further proven that by a mixture of oxigen anesthesia can be perfectly produced with little or none of the symptoms of asphyxia so prevalent when the pure gas is given. So thoroughly are they imbued with this idea in Europe that they use it altogether, Dr. Hewitt going so far as to state that in his opinion "the administration of nitrous oxid free from oxigen is irrational and unscientific." He does not say that oxigen will in all cases prevent a small degree of cyanotic appearance, but that the condition is such that even a member of the patient's family could witness the exhibition without becoming in the least alarmed, and that the anesthesia produced is, if anything, more profound than with nitrous oxid alone.

The same results are obtained by the admission of a proper amount of air during the inhalation. Blueness is in many cases scarcely apparent, while stertor, muscular twitching, and pharyngeal constriction are entirely obviated. Then, too, as further illustrating the fact that asphyxia is not the anesthetizing force of the gas, two or three breaths of air, after the discontinuance of the gas, will restore absolutely the natural color of the blood; yet notwithstanding this obliteration of asphyxial symptoms we still have an operating unconsciousness sufficiently prolonged for twenty to thirty seconds, showing conclusively the true anesthetic properties of the gas, and that the cyanotic appearance is only an accompaniment, the injurious effects of which are infinitesimal, and can be kept in complete subjection by combining oxigen or admitting atmospheric air. The latter method has its advantages over the oxigen, in that we can control each individual by the proper admission of air, as occasion requires, thereby producing greater uniformity, while with the admixture of oxigen in bulk, the variation in time with the different degree of constitutional strength of the subject is sometimes annoying, and when applied by the duplex inhaler the frequent changes and manipulation of the oxigen supply are not reassuring to the patient. Again, comparing the similarity of effects of alcohol intoxication

and anesthesia, we find many constitutions able to withstand the effects of an inordinate amount of whisky, while others are easily affected; the one being nearly impervious to the diluted article, the other incapable of resistance. The same powers of resistance are presented with the gas, or any anesthetic. This explains why the admixture of oxygen in bulk would vary so much in different individuals. By using the nostrils as a valve and having the lips as a guide, the degree of cyanosis can be controlled, the stertor and muscular twitching excluded, and complete anesthesia produced; the small degree of blueness being no disadvantage, and in the ordinary course of daily practice doing no harm. The fact of there having occurred three or four fatal cases admonishes us that there is a very small degree of danger attending, but unfortunately these were cases where conditions were not taken sufficiently into consideration, and where the possibilities of risk were not clearly recognized. The dangers are clearly from the production of asphyxia.

The cases requiring caution are the very anemic, the very full-blooded, the slow breather, and persons of low vital force from grip or overwork. In the anemic, the paucity of red corpuscles is so great that the least deprivation of oxygen is felt in the heart's action, which may be depressed almost to the point of syncope at the expiration of the second breath. In such a case, in the event of death, it would be from almost instant heart-failure, and the post-mortem would not show the effects of asphyxia in great discoloration of the blood and tissues, for the circulation would have ceased before such a condition could have been brought about, yet death would be legitimately from the want of oxidation. In the full-blooded, stertor and constriction of the glottis take place rapidly, and the difficulty of getting sufficient air in the lungs in time to reoxidize the blood might result in cessation of respiration, and finally death from asphyxia. A case of this kind would be more accidental than from the physiological effect, for if the tongue is pulled forward to open the air-passages before the respiratory effort ceases, recovery is certain. In the slow breather, danger of suspension of breathing is as great as heart-failure in the anemic. In my experience there are just as many people in apparent good health with weak respiration as there are with weak heart-force; people who seem never to take a breath except with voluntary effort, and then not more than twelve or fourteen to the minute. The color of the lips would indicate that their blood is never fully supplied with oxygen, and they require their capacity to keep them going, the same

as the anemic do for their heart action. In either they are intolerant of an insufficient supply, so that suspension may occur early in the administration, the heart's action continuing from ten to fifteen minutes after. In the event of death in such a case, the post-mortem would undoubtedly show the results of asphyxia in the discolored blood and tissues. These cases have had much to do with the acceptance of the theory of asphyxia being the only effect of nitrous oxid inhalation.

In low vitality, the dangers are less, but the results might be from prostration, the nervous system being too weak to throw off or rally from the effects of the anesthesia, independently of any depressing effect of the small degree of the accompanying asphyxia. Such a case is reported at the meeting in Buffalo; the lady, a professional nurse, who, like many of her profession, presented appearances of overwork, to which was added severe suffering from neuralgia, for which a resection of the inferior dental nerve had been advised after some months of suffering, loss of strength and health. In the mean time, the cause of her trouble was located in a third molar. On the day of the extraction, she had taken three-quarters of a grain of morphia; complete prostration followed the operation, the respiratory effort entirely suspended, pulse hardly perceptible, and had it not been for the continued use of the Fell apparatus for artificial respiration, the patient would no doubt have died. Cases where such results might be looked for were quite numerous during the grip epidemic of 1891 and 1892, but whether from grip or other enervating conditions, the results might be the same. In my own practice, two cases in this condition were advised against taking the gas; one died within twenty-four hours, and the other three days after leaving my office. Had I given the gas, even had they recovered at the time, death would no doubt have been ascribed to the effects of the gas.

Attention is called to these cases to illustrate the fact that some knowledge of conditions must be had, so that we can use discretion and avoid the dangerous results, by first recognizing the subjects which are likely to be so affected; and second, by recognizing the symptoms of danger as they approach.

From the foregoing and from practical experience, it would appear to point to the conclusion that the inhalation of nitrous oxid does produce perfectly legitimate anesthetic effects as exhibited by stimulation, intoxication, and unconsciousness, and there being no separation of the oxygen from the nitrogen at the temperature of the human body, it is practically an inert gas so far as

oxygenating the blood is concerned, which will, when its administration is pushed far enough, develop the asphyxial condition, the evil effects of which can be rendered practically *nil* by the proper combination of oxygen or air. Inasmuch as the condition of true surgical anesthesia precedes that of asphyxia, the latter should never be produced; and when it is, can only be attributed to a lack of intelligent understanding of the physiological action of the gas.

Cosmos.

NITROUS OXID.

Dr. Darby. I was very much impressed last summer in seeing Dr. Hewitt administer nitrous oxid in combination with oxygen, in London. Dr. Hewitt had an apparatus for administering nitrous oxid in combination with oxygen, and the effect on the patient was exceedingly pleasant to those of us who were on-lookers, because there was an entire absence, except in a single instance, of any of the peculiar symptoms recognized when we administer gas ordinarily. Dr. Thomas has intimated his method of preventing that difficulty by allowing the patient, at certain intervals, when he deems it necessary, to inhale a little air.

Dr. Hewitt's method of administering was by a combination apparatus. He would turn on a certain percentage of pure oxygen, and when he saw indications that the patient required it, he would turn the valve a little, and give the patient a little more oxygen.

Whether it would ever be used successfully in this country, I somewhat question, because it always requires an attendant to manage the gas apparatus itself; and there are very few, except specialists, who would take the trouble to administer an anesthetic that required an extra attendant to assist them.

Dr. M. H. Cryer, Philadelphia. I was present when Dr. Darby saw the administration of gas, as described by him, and was very much impressed with it. After returning home, I procured an apparatus from London, and have been using it, not only in private practice, but in clinical work, with great satisfaction.

Some years ago I was very much opposed to the use of nitrous oxid. I had no special reason, but did not like it—I suppose on account of the coloration of the features and bad symptoms after its use—but after seeing Dr. Hewitt administer it in combination with oxygen, I felt as though I must use it instead

of ether, for minor operations. Dr. Dorr and I together have administered it to a few patients as a preliminary to ether-anesthesia, giving one part of oxigen in ten, then two, three, four, till we gave equal quantities of nitrous oxid and oxigen. When the patient became perfectly anesthetized, we removed the gas apparatus and carried the anesthesia on with ether, for half an hour, with perfect success.

It has this advantage, used in that way, that the patient is carried under the anesthesia without the struggling stage that we generally have with ether alone.

Professor Dorr became very ill in the early part of March, and we have not carried on the experiments. I have administered the anesthetic to two or three in that way since, with great success, and believe that with the use of nitrous oxid in combination with oxigen, the patient can be completely anesthetized in from one and a half to three minutes, and kept in that condition afterward with ether, without any of that ugly struggling we usually have when using ether alone.

Cosmos.

ASEPTOLIN FOR CONSUMPTION, MALARIA, ETC.

ANOTHER GREAT DISCOVERY.

Dr. Cyrus Edson's long promised paper regarding his newly-discovered agent for the treatment of consumption, malaria, and other germ diseases, appeared in the *Medical Record* last week. Aseptolin is the name, but the doctor does not expect to hold it as a proprietary remedy in any sense. The profession are welcome to make it, and if any one can think up a better name for it, that name will be accepted with thanks.

The theory on which Dr. Edson began his investigation is that the blood itself is, to a certain extent, a disinfectant, a germicide; and that often, unaided, it throws off diseases which spring from germs. If he could add to the disinfecting qualities of that blood it seemed reasonable that he would have discovered a powerful conqueror of disease.

He found on investigation that phenol, the active principle of carbolic acid, was in the blood of healthy men, and that in many cases of disease there was a marked increase of it. If he could produce a substance containing phenol which could be injected into the blood without causing poisoning and abscesses, he was certain that he could give nature a powerful helping hand.

"It has long been my personal belief," he writes, "that many

pathological phenomena observed in diseases which are usually credited to germ infection are manifestations of the absorption of poisonous bacterial products. If this be true, then the increased secretion of phenol by the system during disease is one of nature's many devices to cure the germ infection. This naturally led me to think that phenol was a remedy selected by nature for the cure of some if not all of the so-called germ diseases. If nature provides phenol during disease, will she not tolerate the administration of the agent in effective dosage? Yet the fact stared me in the face that any injection of any known solution of phenol in effective dosage was believed to cause poisonous symptoms. The problem before me was to find the form of solution which nature would tolerate."

Dr. Edson refers to the so-called creasote treatment, and declares his belief that its effectiveness is due to the phenol in it. So he determined to experiment with a view of producing a fluid which could be administered without irritation or toxic effects, and which should contain sufficient phenol to turn the scale of natural resistance in favor of cure. A comparatively small amount added to the natural antiseptic fluids of the body might be sufficient to increase the natural resistance to disease to the desired point.

"The solution prepared in my laboratory," continues Dr. Edson, "is a colorless fluid, strongly refracting light, and having the characteristic odor and taste of phenol. Injected under the skin it causes a sharp, burning pain, not as severe as that following an injection of bichlorid of mercury in solution. Generally the injection is not followed by any local irritation. In a few a slight nodule appears at the point of injection, which, as a rule, disappears in a few days. Though I have given 1,000 injections, some very large, I have not seen a single abscess resulting, and nodulation in only two cases, one of which was on my own person following an injection of 250 minims. No reaction, such as follows tuberculin, is observed after the injection of properly prepared pilocarpin-phenol-hydroxid, nor is there any visible physiological action noted following an injection of 250 minims given to a man weighing 150 pounds, except that the presence of phenol was noted in the secretions and in the condensed vapor of the breath.

"The effect of the solution when injected into a patient suffering from disease caused by active germ infection is to directly inhibit bacterial development and consequently to diminish the production of poisonous bacterial products. Its beneficial effects are usually so quick and positive as to convince any one who uses it of the correctness of this conclusion.

"This treatment also enables us to save the stomach for alimental purposes alone, and by giving easily digested, rapidly assimilated and highly nourishing food a very great factor in a favorable result is secured."

Dr. Edson says he has tried aseptolin in the treatment of malaria, and believes it to be a specific of even greater efficiency than quinin. He has personally treated thirty-eight cases, and in none has there been any recurrence of the malarial paroxysm after the first injection of 200 minimis. Other doctors have had a similar experience.

Dr. Edson gives full directions as to treatment, and commends his discovery to the consideration of his profession. *The World.*

ANALYSIS OF ASEPTOLIN AND ITS EFFECTS.

One of the first cases which Dr. Edson treated and cured was that of a boy who was suffering from tubercular disease of the hip joint. When he went to see Dr. Edson, early in last autumn, his case had been given up by the hospital physicians of New York. Unfortunately no formal record was kept of his progress, but the present writer watched it with Dr. Edson. When the boy first appeared he had been without sleep for weeks. He said that he had not been free from pain for more than ten minutes at a time during at least two years, and his left leg was contorted at the hip in a manner which made it absolutely necessary for him to use a crutch in walking. He called daily at Dr. Edson's office, where he was under treatment for perhaps five minutes at a time. In less than a week he slept comfortably. Within two weeks he said the pain had practically left him. Four weeks after that he went to his home in Kansas City, cured. He no longer walked with a crutch. What was left of his limp was purely habit. His cheeks had filled out into healthful plumpness. He said that he felt like running and jumping. From an invalid he had been changed into an ordinary healthy boy. This is a typical instance of the effect which the Edson cure has had on some of the forms of tuberculosis other than consumption.

It is now in the hands of about fifty physicians in different parts of the country. I will leave for a subsequent report the descriptive histories of a number of cases included in the following summary:

The total number of cases that have been and are being treated

with this fluid which have been reported to me to date is 218. Of these, improvement is reported in 212 cases, and no improvement in 4 cases. Of the improved cases 24 have been discharged cured; 68 will, in the opinion of the attending physician, be discharged cured, and in 91 cases, while improvement is noted, no definite prognosis can be made yet. In 32 cases the improvement was only temporary. Of these in which no improvement has been noted, one has died.

In other words, he has devised a way of flushing the human system with a disinfectant just as the sewers of New York city might be flushed with water containing carbolic acid. Into every artery and every vein Dr. Edson sends his preparation, which he calls aseptolin, and wherever it finds a germ it kills it.

Another illustration of its simplicity is this: In the offices of the Board of Health are several little saucers containing bouillon. In these saucers countless germs of the most terrible contagious diseases have been cultivated till each saucer contains millions of them. Any one of these germs would kill a man. If, however, one of the chemists of the Board of Health staff should pour over one of the saucers a solution of one part of carbolic acid to three thousand parts of water every germ within reach would be killed within twenty-four hours. Dr. Edson has done precisely the same thing with the whole body which one of the chemists might do with the germ culture saucer. He has found a way of flooding the entire human system with a solution containing carbolic acid and a new salt, discovered during his experiments, and called pilocarpin-phenol-hydroxid. This solution is introduced directly into the blood, which then becomes a liquid, containing one part of carbolic acid to from 1,200 to 1,500 parts of blood. Thus, with every heart beat a disinfectant more than twice as strong as that which was necessary to kill the germs in the culture saucers is pumped through every part of the body, and makes clean every germ infected spot.

The Journal.

LUNACY AND THE MOON.—A short time before Dr. Charcot died he said, in a lecture, that semi-scientists had for more than fifty years ridiculed the idea that the full moon was a dangerous time for mad people. Better informed men are coming back to that old-time notion, said Dr. Charcot, as the result of increased learning on the subject of earth tides, similar to the oscillation of sea tides.

Exchange.

PREPARATION OF CAVITY MARGINS.

Dr. E. B. Weeks, Litchfield, Minn.

The time was, but now we hope is passed forever, when there was no definite instruction given as to the lines on which a cavity margin should be formed or how much or how little the enamel walls should be cut away with reference to precluding future recurrence of decay.

Remove decay. Cut away frail walls. Bevel the margins. These were the few but elastic rules for the preparation of all cavities, and as ascertained from the writers in the journals, from speakers at our society meetings, and by observation of fillings coming under our notice, these rules meant very different things to different operators. A cavity cleansed of decay by one operator would not be considered thoroughly excavated by another.

One would leave enamel walls for retention of the filling, while another would know that the retention of such frail walls would be the ruin of any filling within a very short space of time.

Enamel margins were considered beveled by some, while others would go much further. But thanks to Dr. Black and others we have now a system of definite laws as to the preparation of cavity margins and enamel margins, how much the walls should be cut away, how much the enamel should be beveled.

It is necessary to the stability of a filling that these laws be both understood and carried out in every cut of the chisel. It is also my observation that these laws are not carried out in the every-day practice of the rank and file of our profession. The first requirement is a knowledge of the minute anatomy of the teeth, and of the lines of cleavage of enamel. Then the first rule should be: Cut away all enamel margins not supported by sound dentin. The wish to keep a frail wall of enamel for a retaining wall must give way to the fact that it will not stand, therefore cut it away.

Second. If the line of the margin of the cavity brings you close to the line of demarcation between the lobes of the teeth, cut through to, or beyond such line, for it will prove a source of weakness to your filling if you don't, because of the greater liability of the enamel to split along these lines.

Third. Cut away the margins of the cavity clear beyond the lines of contact on the teeth. Let nothing deter you from doing this, for if the line of union between the filling and the enamel is at or within the line of contact, recurrence of decay is almost certain.

Again, carry the cavity margins cut to such a place on the surface of the tooth that the fillings may be smoothly polished and beautifully formed. Do not cut into a developmental groove and then stop short of the end of it.

Do not cut next to a groove or to another cavity and stop there, leaving a thin division of enamel between them, but cut it away.

Having formed the cavity margins on the lines indicated, it remains to bevel the enamel margins. The enamel should be shaved or planed down with sharp chisels to that line on which it splits or cleaves off most readily, then with enamel trimmers the margins of this enamel should be beveled beyond this line so that the ends of the enamel rods may be protected by the filling. It is impossible in a paper like this to demonstrate just what this bevel should be at each particular part of the tooth or cavity. It must be learned from close observation of the lines on which the enamel cleaves at each different portion of the tooth, and by following the teachings of Dr. Black, whose writings and admirable illustrations are open to each one of us, a heritage of vast value to us all.

Dr. Ottolengui, in his book on "Methods of Filling Teeth," after rehearsing what has been accomplished in the past, says: "Something more will be required of the dentist of the future. He will be asked to abandon the assertion, 'Madam, your tooth has decayed around my filling, but the filling is all right.'" Undoubtedly there are teeth in which it is impossible to prevent recurrence of decay, but it is equally true that in too many times when "the teeth decay around the filling," the filling is not "all right."

Dental Review.

YOUNG AMERICA *versus* BACTERIA.—An American dentist has described the methods he adopts to teach his children to attend to their teeth. A pecuniary reward seems the practical inducement. Theoretically, they are taught that scale, or anamal-cule, gather in a mouth and on teeth that are not cleansed; and that the only way to keep the horrid creatures off the teeth is to brush them frequently. "Not many mornings ago I was somewhat shocked and very much amused on entering the bath-room, where my four-year-old hopeful was scrubbing his teeth with powder and hot water, to hear him exclaim in the most triumphant manner: 'Papa, I'm scalding the bugs!'"

British Journal.

THE PROFESSION AND THE MAN.

Rev. Edwin H. Hughes, Newton Center, Mass.

A glance into a book a few years ago was rewarded by the interest of the following tradition, given now according to the memory of a hurried reading. There once dwelt in Hyderabad, India, a man whose name was Alhafed. One day there came to his fine country home a ministerial guest in the person of a Buddhist priest, who gave to his host this crude account of the world's making: Back in the uncounted centuries, in the place of our revolving earth, there was stationed a large, circular mass of thin vapor. In his own time the Almighty stretched forth his arm, placed his forefinger in the center of this misty globe, and began to whirl it with infinite rapidity. The mighty circle became a flame and sped on in its fiery course. When the motion ceased the ball began to cool and contract. Mountains burst forth from its sides. The surrounding atmosphere rushed against it and depressed the surface, making beds for the oceans. According to the conditions of the cooling process rock was formed in one place, coal in another, and diamonds in a third. But Alhafed asked the priest what a diamond was. The stone was described and its value stated. "Where are diamonds found?" was asked, with sparkling eyes. The answer was that the gems usually lay where a swift stream passed over white sand. Alhafed immediately became discontented. He sold his home and farm, collected his moneys, and started out in search of diamonds. He went from land to land, and after wanderings, long and vain, he stood at last on the shores of Spain and gazed out over the waters of the Mediterranean. The sun shone on the wave-crests and reminded him of the long-sought riches. Crazed with disappointment he cast himself into the sea, and his poor body was carried away through the rocks of Gibraltar. Meanwhile, the man to whom Alhafed had sold his farm toiled on industriously. One day as he worked in his garden he saw a shining stone in the sand of a little stream. He picked it up, carried it into his house, and placed it on a shelf. Shortly there came to call the same Buddhist priest. He spied the precious stone in its carbon case, and excitedly asked: "Where did you get this?" The man led him forth to the garden stream, and stooping down the priest drew forth diamond after diamond. Alhafed's successor became fabulously rich, for he was the owner of the famous Golconda mines.

The untrustworthy legend gives a trustworthy moral. Men are ever leaving the ordinary with a view to finding the extraordinary. They do not expect to find diamonds while engaged in the plain pursuit of gardening. And often in their proneness to consider the best things as distant and exceptional, they fail to gain the treasures that lie near at hand. Nor does this mistake confine itself simply to matters commercial and material. Supposing the weird story as history rather than as allegory, it is strictly true that the luckless Alhafed would have found more character as well as more wealth if he had not been seized with discontent of his occupation. And this moral view is the one which has point for us. For while it is not likely that some men of to-day will leave an honest profession and go in search of Captain Kidd's treasure or the casket at the rainbow's foot, we may yet be captured by the thought that the manhood for which we long and strive is to be gained and deepened only apart from the chosen work of our every-day lives. It therefore comes about that our calling sinks to the level of immoral drudgery or never rises, at the highest, above a petty commercialism. It is possible for a man to lose himself, his brain, his heart, his very soul, in his profession. It has been told as a matter of joking that somewhere in the Old World there is a tombstone with this inscription : "John Jones. Born a man ; died a grocer." But, ridiculous as the old epitaph may seem, it really suggests the record of too many lives. It is not at all beyond sober truth to say that some, born as men and with the possibilities of high manhood, have died simply grocers or preachers or dentists. The intense specialism of our time has its advantages, yet this specialism has its dangers. If there be intelligent persons who contend that men are made by circumstances, we may, while being unwilling to allow the fullness of their claim, still grant that it will be hard to get a broad spirit out of a narrow work.

It is singular and anomalous, however, that in this age of rigid specializing there should still be the loud demand for breadth. It is hopeful that this demand is made not only on belief, but on conduct. The time was when whole areas of life were put beyond the reach of morality. The edges of that dark period, sometimes even now, are seen amid the light of the present wider conscience. Mackenzie Wallace says that in Russia such incidents as the following are still possible : A house-breaker, when in the act of robbing a church, finds it hard to extract the jewels from an image ; he thereon makes a vow that if a saint will assist him he will place a ruble's worth of candles before the saint's

statue. A peasant prepared to rob a young man connected with the Austrian embassy in St. Petersburg. At length he kills his victim ; but before doing so he enters a church and commends his bloody undertaking to the divine protection. A robber murders and raffles a traveler, but refuses to eat a piece of cooked meat, which he finds in the cart, because, indeed, it happened to be a fast-day. Extreme cases such as these will illustrate the efforts that have been made to mingle light and darkness and yet live in both. It was a distinct advance toward righteousness when it became the general verdict that a man's morality was the very essence of vanity and pretence, unless it kept him from outbreaking crimes. But our broadened thought now recognizes that this rule does not go far enough. It is at best simply negative. So there is at last heard a burning demand that the cheap and false distinction between things sacred and things secular shall be utterly wiped out ; that men shall so use their constant work as to make it a means and expression of character ; that the heart shall ever command obedience from the head and hand, and that no longer professionalism shall devour manhood. It is sure, this lofty and heroic ideal demands a large and serious purpose. No superficial person will reach it. If there is anything so sad as to see a man who could be big in intention and in heart, toying with some little work or movement, it is to see a little man taking hold of some great profession with a puny purpose. We need to come to our regular occupations with a thoughtful and humane spirit. There is too much tendency to regard our work as a grim necessity foisted on life, as a punishing curse, as a rank intruder. But such a view needs to be banished. The thoughtful man will find enough of moral bearing and beauty in his calling to lift it out of the degradation of drudgery or commercialism, and to set it far on high.

There will be, first of all, the knowledge that his work stands for a genuine need of human life. It is a fact that sometimes we grow weary of this claim, especially when it comes from the mouths of men whom we suspect not to use it sincerely. The simpering agent who is out for the bread-and-butter purpose, who yet seeks to invest his work with the purely benevolent and missionary air, often puts a heavy task on our patience. But if hypocrisy be the tribute which vice pays to virtue, the protests of the insincere represent the attitude toward their employment that true men should seek to hold. For in truth every calling or profession stands for some necessity in life. There is no trade so humble as not to gain dignity from this view. The carpenter may say : It is absolutely necessary that people should have homes in which to dwell,

wagons in which to travel, boats in which to sail, cars in which to ride, churches in which to worship. Viewing his work from the standpoint of its essential relation to life, the carpenter may rightfully claim that his occupation be somewhat exalted. The merchant may say: It is positively needful that people should be provided with eatables, with coal, with oil, with warm garments, with household conveniences. The mercantile calling represents, therefore, a plain and imperative need of the world, and should be held in high respect. The lawyer may say: The relations of men are not yet perfect. The organized life of society creates questions and crises. Rogues are alive and busy. Honest men are sometimes obstinate and unreasonable. The troubled world needs legal advice. Having such responsible duties, the legal profession should be given high regard. The doctor, whether of medicine or of dental surgery and science, may likewise make an impressive plea. He may say: There are many ills that flesh is heir to. People are suffering. Subtle disease is floating in the atmosphere. Both the prevention and the cure of aches and pains are constantly needed. The people must rely on a quick eye, a knowing mind, a trained hand, that their afflictions be relieved. Having for its object the preservation of health and the alleviation of physical woes, the medical profession should be assigned a high value. Now, all these claims are just and should be readily granted. He who holds in contempt any vital employment of life and casts discredit on its followers has a false idea and is in sore need of moral enlightenment. It is not contended that man in the midst of the work which supplies his personal wants should be forever posing with the air of a philanthropist. That would scarcely be an honest attitude. The urgent needs that press on each one of us, the needs of shelter, clothing, food, will afford a large and proper motive for professional activity. But it is insisted that a man should view his work as it relates to other men, and not simply as it relates to himself. And he who in selfish greed applies his powers to his daily tasks, and while grasping gold in payment never considers that through the years he has been giving a good, safe contribution to life; that he has been sheltering bodies, satisfying hunger, defending the troubled, or relieving the suffering; he who fails to get this view of his tasks has all the while been becoming more of a professionalist and less of a man. The person who does not seek the utmost skill and buy the best instruments for his dental work, not only because he wishes to get larger prices, but also because he wishes to render better service to his patrons, and to give an honest response to a need of human life, is most

certainly sinking his manhood in his dentistry. It is surely not too much to ask that men come to their regular vocation in this generous spirit. The great poetess of England has some lines in which she teaches that the largeness of one's work will be determined by the individual purpose. Her statement is that it is better to be a tight-rope walker with a hearty thought than to be a poet with a superficial aim:

"I would rather dance
At fairs on tight rope, till the babies dropped
Their gingerbread for joy, than shift the types
For tolerable verse, intolerable
To men who act and suffer. Better far
Pursue a frivolous trade by serious means
Than a sublime art frivolously."

If, therefore, a man has an employment which is not frivolous, an employment which makes an essential part of our great and complex life, he needs to face it with moral pride and earnestness.

There is, moreover, a thought which will give a man's work height and aspiration just as this already stated will give it breadth and sympathy. Any true profession or work has a divine side. There is a large suggestiveness in portions of the religious history which we call the Bible—suggestiveness for this particular point. Frequently it is represented that the call to the very highest life and leadership came to men as they were engaged in their ordinary pursuits: The call to the most majestic position as general, legislator and ruler that ever came to man was received by one who was quietly tending his flocks on the mountain-side. The first king of a mighty nation went out on a faithful search for his father's herds, and instead he found a kingdom. The shepherds who kept the quiet watch over the sheep on the Judean plains were the men who heard the thrilling advent song and gained the honor of the first worship. Matthew was busy at the table of the tax-gatherers when he was summoned to the discipleship that gave him immortal glory. John and James were engaged in the common occupation of fishermen when they heard the voice of authority, and pulled their boat over the blue waves to come ever nearer and nearer to Him who was to dominate the future. These incidental touches are suggestive. They mean, at the least, that the daily employment does not, need not, conceal the highest things from the worker. For it is not overbold to say that to the reverent eye every vocation reveals things and powers which came from a divine agency. The carpenter handles wood which a power, not himself, has been a hundred years in making. The painter mixes colors which some power has driven across the ninety-two

million miles from the sun and stored in metal and in planet. The drivers on our street-cars grasp the unseen force on the upper and lower wires, and an invisible hand pushes the loads of busy men through the streets. There is no man whose work does not open up to him infinite distances, and who may not catch divine messages in the midst of his occupation. It was the thought of old Stradivarius, the violin-maker, that since a divine power had put the strange harmonies in the strings and cavities, he who so combined the conditions as to make the best instrument was in reality nothing less than a partner with the Infinite. It is no wonder that George Eliot, in her "Stradivarius," should exalt the man's dignified thought of his work. She represents the faithful artist as saying :

" Who draws a line and satisfies his soul,
 Making it crooked where it should be straight?
 An idiot with an oyster-shell may draw
 His lines upon the sand all wavering,
 Fixing no point or pathway to a point ;
 An idiot one remove may choose his line,
 Straggled and be content ; but, God be praised,
 Antonio Stradivari has an eye
 That winces at false work and loves the true,
 With hand and arm that play upon the tool
 As willingly as any singing bird
 Sets him to sing his morning roundelay,
 Because he likes to sing and likes the song."

Though his friend Naldo says :

" 'Tis a pretty kind of fame
 At best that comes of making violins ;
 And saves no masses either. Thou wilt go
 To purgatory none the less."

But Stradivarius replies :

" 'Twere purgatory here to make them ill ;
 And for my fame—when any master holds
 'Twixt chin and hand a violin of mine,
 He will be glad that Stradivari lived,
 Made violins, and made them of the best.
 The masters only know whose work is good ;
 They will choose mine ; and while God gives them skill,
 I give them instruments to play upon,
 God choosing me to help Him."

What reason is there to prevent every honest man who loves his profession, who thinks of it as responding to human needs from having this noble thought of his work ? When once we rise to such a view we are sure to lift our employments with us above either wearying drudgery or ambitious greed.

And as every profession has a human breadth and a divine height, so does it have a personal point. By this it is not meant that a profession provides a man with food and shelter and other needed good. This it ought to do, and does do. But the meaning is that every man's employment relates itself vitally to the man's character. It is not at all the intention to engage now in any subtile and refined moral psychology. We will leave that task to the schools. Men, however, are far too likely to have a cheap thought of the influence which their professional activities shall have on themselves. It would be a sad and disastrous view if we were driven to conclude that the things to which a man gives three-fourths or two-thirds of his conscious life were wholly immoral, so much so that the doing of them would in no real way contribute to his higher being. For many decades, Gladstone, the Prime Minister of England, has engaged each week-day in chopping wood in the Hawarden forest. He has done this, not with the idea of supplying fire-wood for the castle, but rather of supplying himself with muscular power, so that he might meet the pressing demands of statesmanship. Now, it is simply incredible to think that the greatest statesman of the British empire receives a physical reflex influence from his work as a woodchopper, and yet does not receive a mental and moral reflex influence from his profession as an official and reformer. There is a scientific doctrine of the persistence of force. And there is a sure doctrine of moral persistence. No man escapes from his own work. His profession refuses to be shaken off. It haunts him though unseen, dogs him though invisible, sleeps with him in the darkness, and comes back to the next day's work to toil with him again. Yet this is not the ordinary view. At the end of a day's labor one man drops his hammer and nail-pouch and says, "Done." It is not true. The day's work is only begun. Another man drops his yard-stick and says, "Done." It is not true. The day's work is only begun. Another man puts down his forceps or mallet, stops his whirling wheel, dismisses his patient, and says, "It is done." But if it be true that the physical skill gained from the day's task is to reside henceforth in the man's arms and hands, it is safe to say that the moral influence of that work is to remain ever in the man's soul. There is a true and deep sense in which every man's employment stays with him perpetually. The work that we do on all lines will insist on continued association with our souls. And this view of one's occupation will redeem from wrong views as to failure. We may see the house which represents ten years of a man's work and saving go

up in smoke and flame. We may cry out, "It is too bad! All the man's effort has been in vain." But that is a superficial view. It deals only with man as an animal. It allows no height, no breathing space. The most essential part of the ten years' work is in the man, in the patience, industry, honesty, keenness, love, that have day by day rebounded to his soul. Certainly this idea deepens one's thoughts of his profession, and delivers it forever from a cheap and temporary place in his life.

It must surely be, then, that these three conceptions of employment will set our daily work on high. To the man who comes to regard his profession as responding to human need, as fitting itself to divine coöperation, and as pushing its influence backward forever on his own soul, that profession will forever contribute to manhood, and will forever call the growing manhood to its service. It will thus be seen that the tribute which Mrs. Browning, in her *Aurora Leigh*, pays to the world's moral teachers is no piece of poetic extravagance:

"I write so
Of the only truth-tellers now left to God,
The only speakers of essential truth,
Opposed to relative, comparative,
And temporal truths; the only holders by
His sun-skirts, through conventional gray-glooms;
The only teachers who instruct mankind,
From just a shadow on a charnel-wall,
To find man's veritable status out
Erect, sublime,—the measure of a man;
And that's the measure of an angel, says
The apostle. Ay, and while your common men
Lay telegraphs, gage railroads, reign, reap, dine,
And dust the flaunty carpets of the world
For kings to walk on, or our president,
The poet suddenly will catch them up
With his voice like a thunder,
'This is soul!
This is life, this word is being said in heaven.
Here's God down on us! what are you about?
How all those workers start amid their work
Look round, look up, and feel, a moment's space,
That carpet dusting, though a pretty trade,
Is not the imperative labor after all.'"

International.

It is easy to keep the hands free from grease and dirt, while doing plate work, by wearing an old pair of gloves when handling flasks.

N. S. Cox.

SMALL INVENTIONS THAT HAVE BROUGHT FORTUNES.

No better examples of the importance of small things can be found than among the records at the United States Patent Office, in Washington. There are to be seen certain small objects which, by a lucky turn of affairs, or perhaps by the ingenuity of the inventors, have become known throughout the United States and even throughout the world, and have been the means of filling the pockets of both the inventors and their representatives. In fact, it would seem as if inventors of small objects have been far better paid than skilled mechanics and engineers who have spent months and years in perfecting elaborate mechanisms. Certainly, in proportion to the amount of work done, the lot of the inventor of small objects is more to be desired than that of the man who spends the best part of his life over an elaborate machine, the merits of which are tardily recognized, not, perhaps, till the inventor, through worry and sickness, is in no condition to enjoy the fruits of his toil. It would seem also as if the inventors of small objects which have paid have not, as a rule, been inventors by profession. They have been for the most part persons who by sheer luck have stumbled on an idea which somebody else has recognized as a good one. Without the suggestion of this "somebody else," who is usually the one who profits, the great idea, though born, would rarely grow to maturity.

A story current at the Patent Office is told of an old farmer up in Maine. The children of the old fellow, like many other children before and since, had a way of kicking the toes out of their shoes. The farmer was of an ingenious turn of mind, and he cut out a couple of copper strips for each pair of shoes, which were fastened over the toes and between the sole and the upper. The plan proved so successful that the farmer found that, where he had been buying three pairs of shoes, one pair would suffice. There happened along about this time a man from the city with an eye to business. He prevailed on the old man to have the idea patented. This was done, and between \$50,000 and \$100,000 was made out of it. How much of this the old man got is not known, but it is presumed that the promoter got the larger part. The record at the Patent Office shows only the drawing of the invention as patented on January 5th, 1858, by George A. Mitchell, of Turner, Maine.

Another similar invention, which made a great deal of money, was the metal button fastener for shoes, invented and introduced

by Heaton, of Providence, R. I. At the time it was considered a fine invention, for the old sewed button was continually coming off. It has gradually grown in popularity since its introduction in 1869, till now very few shoes with buttons are manufactured without the Heaton appliance.

By a comparatively simple arrangement the shipping tags in use all over the country to-day were made a possibility. The chief trouble with a paper tag was the almost unavoidable tearing out of the tying hole before the package arrived at its destination. A cardboard reinforcement, round in shape, on each side of the tying hole was all that was necessary to make the shipping tag a success. This was the invention of a Mr. Dennison, of Philadelphia, who has made a fortune out of a lucky five minutes of thought.

The chief examiner of the division of toys cites many instances where fortunes have been made on puzzles and similar objects. The pigs in clover puzzle had a curious history. The inventor, Crandall, put it on the market before the patent had been granted, or, in fact, even applied for. Other people, recognizing the value of the invention from a financial point of view, formed companies and began manufacturing the puzzles in even larger quantities than Crandall's company could turn them out. Crandall, of course, contested for his rights and prayed for an injunction. The claim was put into interference, which is a long process and one which tries both the patience of the department and that of the attorneys. The unfortunate part of it for Crandall was that the craze for the puzzle was over before the interference was settled. This is the same Crandall who invented the famous children's building blocks, with dovetailed edges, which had such a run and are popular even to-day.

The return ball, a wooden ball fastened to a thin strip of rubber, with a wooden ring at the other end, which was patented somewhere in the sixties, had a rush of popularity which netted its inventor \$60,000, and it is sold widely to-day. The patent has now expired. The flying top, a round tin affair with wings, wound with a string and shot up in the air, made a fortune for its inventor. Several years ago a puzzle appeared which attracted considerable attention. It consisted of two double painters' hooks, which, when fastened together in a certain way, could not be taken apart, except by one who had seen it done. It is said that this invention came about by the merest chance. A painter was standing on his ladder scaffold across the front of a house.

He had occasion to use a pair of the hooks, and, picking them up hurriedly, entangled them in such a manner that it was several hours before he could get them apart. He forthwith had drawings made and filed an application for a patent, which was granted. No figures are known at the Patent Office, but it is supposed that he made a large sum of money, for the puzzle was sold for twenty-five cents in all parts of the East, and it cost much less than a cent to manufacture.

A discovery which has been the means of bringing forth a number of inventions, both great and small, was that of Goodyear, the rubber vulcanizer. It was not till the Goodyear discovery of the vulcanization of rubber, in 1844, that rubber could be used, except in a very primitive fashion. Then it was found that, by the use of sulfur at a certain temperature, rubber could be molded, shaped and worked into any form. Immediately after this discovery, the application clerk at the Patent Office, having charge of such matters, was besieged by hundreds and hundreds of applications for inventions with the Goodyear discovery as a basis. They related chiefly to matters of form in which it was desired to work rubber. After that time the rubber blanket, the rubber overshoe, the rubber band followed one after the other in rapid succession, and since that time there has not been a month that some patents have not been granted for different forms of rubber.

Now applications are coming in at the rate of four or five a month, involving many applications of the pneumatic tubing or cushioning principle. There are now pneumatic blankets, pneumatic pillows of all descriptions, pneumatic soled shoes for running and jumping, and pneumatic car fender guards.

A recent invention which has come into prominence within the last two or three years is the tin cap on the top of beer bottles. This appliance is steadily taking the place of the rubber cork with the iron thumb lever. It is found that the sulfur in the rubber cork is acted on by the beer, with the result of causing the rubber to deteriorate and spoil the beer. An offer from some whisky makers is attracting the attention of inventors. It is a reward of from \$25,000 to \$50,000 for an appliance on bottles which will prevent their being refilled. As it is now, all the great whisky and beer manufacturers of the country, and, indeed, of the world, are constantly getting letters from people who complain that they have received inferior qualities of liquids under well-known labels. Of course, it is impossible without some such appliance for manufacturers to guarantee the contents of bottles.

All appliances so far with this end in view have been unsatisfactory. The chief difficulty seems to be to make the invention practical and cheap enough for commercial use. The problem has been solved by a number of inventors, but at too great an expense, for it has seemed up to the present impossible to get the cost below \$2 a bottle. Completed, the appliance must not cost more than two or three cents a bottle.

Several years ago a patent was granted for an addition to tin cans which made the opening of them a very easy matter, and did away with the old-fashioned iron can opener. The can had a small rim just below the top, bent by machinery at an angle just below the breaking point. By a blow on the top of the can around the rim the top would be broken off with a smooth edge. This did not cost the inventor one cent a thousand above the regular price of the cans. Armour, the Chicago meat man, as soon as he heard of the invention, ordered 10,000,000 cans to pack meat in, to fill an order for the German army. The inventor of this can made a fortune in the first six months. His cans are now used all over the United States for oysters and fruits.

The ordinary wood screw, patented August 20th, 1846, by T. J. Sloan, is recorded among the simplest inventions that have made the most money. Then screws were cut by machinery, some of which are still used by the American Screw Company, of Providence, R. I.

The man who invented the brass spring fingers one sees on lamps for holding the chimney in place got for a long period a royalty of \$50,000 a year. William A. Thrall, a former official of the Chicago and Northwestern Railway, patented, June 1st, 1886, a thousand mile ticket, which possessed so many advantages that it has been adopted by many Western roads. Several years ago Mr. Thrall resigned his place, and is now living on a royalty of \$20,000 a year. Within the last two weeks a patent has been granted on a new whistle used principally by bicyclers, and made on the principle of the siren or fog whistle. It is manufactured by a firm in the East, and they have only been able to supply the Eastern trade. The inventor has received for some time past \$5,000 a month. Among musical instruments for general use, the autoharp has perhaps made the most money. The first one was patented in 1882. Now they are sold very reasonably, and manufacturers report immense sales every month. The organette, with perforated paper sheets, is another of the money-making musical instruments. *Washington Correspondent to the N. Y. Sun.*

OBSTACLES AS OPPORTUNITIES.

Some people always lose heart when they come to an obstacle. They turn squarely around and say "O, well, that puts an end to this scheme. It does seem a pity that I can't take hold of anything without being balked!" The trouble is most persons do not understand the true nature of an obstacle. They look on it as something final, immovable, insurmountable. They seem to consider it is something intended by a frowning Providence to put a stop to the particular thing which they are doing. Now, this is quite contrary to the true purpose and economy of obstacles. They are not intended to discourage, but to increase, energy.

Take a stream of water, for example. That stream understands the nature and purpose of an obstacle. It is something to pile up and amass and concentrate energy; it is something to climb on and dash over with ten times augmented force. The same thing is true of obstacles in the human pathway; yet how few people are as wise as the stream to understand it?

Instead of regarding the obstacle as a discouragement and a sign that we are working in the wrong direction, we ought to look on it as a providential opportunity—an opportunity to test and to augment strength of purpose; an opportunity to rise to the level of higher power; an opportunity to gather new resource and expand to wider channels of usefulness.

How often has the obstacle, attacked and surmounted, broadened a man's outlook on what it is possible for him to do! How many great and good enterprises have widened and deepened in scope and power by being for the time obstructed and delayed? Wonderful is the relative power of the obstacle—its power to open men's eyes to the real possibilities of what they have undertaken! Wonderful is the inspiring power of the obstacle—its power to expand vision and spur energy! Most wonderful of all is the dynamic and strengthening power of the obstacle—its power to reinforce the strength which assails it, and augment the resources which are gathered against it!

O, the foolishness of misinterpreting obstacles! It is as if a bird should complain against the pressure of the air which buoys it up. We rise only by that which opposes; we strengthen only by that which antagonizes. Opposition is the life of endeavor. The man who succeeds is the man who makes obstacles the steps of his ladder.

Exchange.

HINTS.

M. G. Jenison, Minneapolis, Minn.

Glass can be drilled quite easily with an ordinary steel drill, in the dental engine, if the instrument is kept moistened with a solution of turpentine and camphor. By the same means, cavities can be inserted for the filling of artificial teeth. In this operation it has been my custom to grind away with the corundum wheel as much of the tooth as I desired to contour with the gold, and then cut the retaining shape with the drill.

If gold fillings be desired in artificial teeth a good imitation may be made with the gold used by china decorators. This is put on with a brush like paint, and the filling can be outlined in any size or form desired. After firing it the same as china it is burnished, and will wear and retain its color till worn away by abrasion. By putting on two coats of the gold the durability is increased.

If it is desirable when the gold is worn away, the tooth can be removed from the plate and the operation repeated. The labor and expense is comparatively slight.

Ohio Journal.

GUAIACOL.—Among the therapeutic possibilities of guaiacol, its use on mucous membranes is important. As an antiseptic it is almost equal to carbolic acid, while pure guaiacol is devoid of the caustic properties of carbolic acid. It can, therefore, be applied undiluted to the mucous membrane of the throat, nose and mouth, if not used in excessive quantity. It stings, but the unpleasant sensation soon passes off. It is often curative in tonsilitis ; it is a prophylactic of apparent power against diphtheria ; it is a useful agent in cases of tuberculous ulceration of the throat, and is one of the best of topical applications in ozena and other nasal affections. In children and others to whom the undiluted drug might possibly prove too severe, it may be diluted one-half or two-thirds with glycerin or any bland menstruum (olive oil, cotton-seed oil, cocoanut oil, liquid petrolatum). To get good results from guaiacol, whether used internally or topically, have a pure preparation. Some of the specimens found in the shops are contaminated with impurities possessing caustic quality.

Philadelphia Polyclinic.

In his annual report Dr. W. M. Welch, physician in charge of the Municipal Hospital, states that of the diphtheritic patients treated with antitoxin, 28.14 per cent died, and of those not injected with the serum 25.99 per cent died.

OUR QUESTION BOX.

With Replies From The Best Dental Authorities.

[Address all Questions for this Department to Dr. E. N. Francis, Uvalde, Texas.]

Question 234. *Patient, twelve years of age; left upper deciduous central extracted three years ago; permanent right central partially erupted at that time. The left incisor failed to erupt. For the past two years the left central has been located high up under the lip, but does not move down. Her mother wants something done. What shall it be?*

I should defer doing anything at present. The teeth have been hindered in development, either from sickness of mother during gestation, or patient in infancy. It is possible for the teeth to erupt at any time.

Francis A. Macon, Henderson, N. C.

If there is space, I think the tooth could be drawn into line by constructing a small vulcanite plate, covering the roof of mouth, in which should be imbedded a pin or hook; also allow a flange of vulcanite to project over the gum between lateral and central, so as to protect the gum from being cut by a band which is to pass from hook to tooth. Ligate a rubber band to the tooth. If that can not be done, insert a small gold anchor screw (which can be cut off and finished as a filling after the case is corrected); to the band can be secured a little hook, previously vulcanized in the deep part of plate, so as to exert strong tension. Shorter bands may be used as the case progresses.

V. H. Diefenderfer, New Castle, Pa.

[See Angle's System of Regulating.—E. N. F.]

Question 235. *Young lady with abscessed first upper bicuspid with fistulous opening. I have cut away necrosed bone once, but can not get it to heal, or stop pus discharge. What treatment shall I try after using peroxid of hydrogen, aristol, campho-phenique and sulfuric acid?*

Use trichloracetic acid.

— — — *Dayton, Ohio.*

1st. It should be unquestionably ascertained that necrosis exists. This is best determined by the nature of discharge and duration of conditions. Should there be necrosis, I should prefer extracting the tooth before removing more bone or process.

2d. If simply an abscess, I should force H_2O_2 through the canals and fistulous opening, once a day for a week. If without favorable indications thereafter, should extract tooth. You should have a fresh supply of H_2O_2 to begin with, as this remedy is not one of the most staple in composition, and frequently we find ourselves using plain water, the H_2O_2 having lost its atom of O.

Francis A. Macon.

I am not familiar with the course of treatment you have tried. My method is to remove decay, open up canal nicely and with a fine Donaldson bristle, wrapped with a few shreds of cotton, pump a little carbolic acid through the apical foramen till its presence is indicated on the gum by whiteness, etc. Seal a mild dressing in root with temporary stopping, and let it stand for four or five days. The carbolic acid produces a cauterizing effect, and healthy granulations soon appear. When the patient returns the discharge will probably have considerably diminished if not altogether ceased. Remove the cotton from the root, and if any odor is present renew; after thoroughly sterilizing and drying out canal, and waiting five or six days, fill the tooth.

V. H. Diefenderfer.

[Blair's Vaporizer is often useful in these cases.—E. N. F.]

Question 236. *A young lady of twenty years is very careful with teeth, but enormous accumulations of tartar will form in a few months. Gums are hypertrophied. Have cleansed teeth thoroughly and used aromatic sulfuric acid on the gums with no permanent result. What shall I do next?*

Keep the teeth thoroughly cleansed; give the patient a suitable wash and treat constitutionally.

Francis A. Macon.

Eternal vigilance is the only way to reach definite results. Have deposit removed every three or four months, and by the use of an anti-septic wash the diseased condition of the gums may be largely corrected.

V. H. Diefenderfer.

Question 237. *A boy, aged twelve, has the first molars and four central incisors erupted in each jaw. He has a very high palate, narrow and protruding upper jaw, and has suffered much with sickness, though apparently in good health now. There is syphilitic taint from parent, and ugly deformity of jaw. Should any regulating be undertaken? If so, when?*

Prefer to reserve opinion till seeing the case, but I think if any regulating is attempted, it should be done soon, health permitting.

V. H. Diefenderfer.

Consult his attending physician, and if advisable, regulate at once. I would regulate before patient is sixteen years of age, or not at all.

Francis A. Macon.

Question 238. *1st. Why do my teeth decay? 2d. Why do we cut wisdom teeth so late? 3d. What is the cause of decay?*

As the above questions require answers somewhat based on theory we have been unable to obtain answers, the readers preferring to acknowledge the old theories rather than advance any new ideas.

Dental journals have been published many years, and much space has been devoted to these subjects.

If we should go into their discussion minutely there would be a thousand and one reasons, and these reasons, or causes, would become so intermingled with the germ and chemical theories of recent date, that sufficient space could not be given in this department.

If we were to answer by the use of one word it would be, civilization.

Civilization opposes the hard foods requiring healthy use of teeth and their supports in mastication; civilization furnishes us with heated sleeping apartments and poor ventilation; civilization opposes proper exercise for the healthful functions of body and mind, and furnishes rich food, boiling coffee, frozen cream and alcoholic stimulants that place all organs and secretions in an abnormal condition, etc.

Civilization bolts our "staff of life" (bread), leaving starch, which does better for stiffening shirt bosoms than for food, but we throw away the phosphates so necessary for the building of tooth structure.

We work on nerve, and expect to raise hard-boned children on Latin grammars and Greek verbs; to raise giants of health in crowded cities or from over-worked women on our farms; giants of health after patent appliances and medicines have failed to abort the laws of nature.

We raise babies on patent foods through rubber nipples, and expect the chemist to make good the deficiencies in chemical "kids."

Metal fillings and local treatment are like a new hat on a sickly dude. The hat does not make the man, or the dentist the teeth. Without the proper models to work on our patch work is a failure.

If we have good teeth, "cut" at the proper time and retained for life, we must have a robust manhood.

The decay of teeth indicates disease, and its cause is an artificial life, a failure to follow God's laws. There must be normal physical development, not 70 per cent in brain development and 30 per cent for health and contentment, but an equal division that will not strengthen one function and weaken another. There must be temperance in all things.

Change is necessary to health, not at a 40-mile an hour rate, but a gradual one that will not plunge us with the forces of steam or electricity from snow-capped hills to the shade of a banana plantation in a few hours. All changes should be gradual—like youth to old age—even in our drinks, that too often put our teeth to a severe test, when ice-water is followed with hot tea, and our stomachs and secretions—well, that is out of the line of dentistry, but we get the benefit of it.

Health is an expensive luxury in these days of dollars, but till we can go through a two or three generation health reform the micro-chemical analysis of decay and its cause is of as much use to the dentist as a porous plaster for cancer in the stomach.

Answer to question regarding gutta-percha plates in last issue.

I have used gutta-percha for some time for permanent dentures. The manipulation is the same as for rubber. I cut gutta-percha in strips, dip for a moment in boiling water, and pack with handle of excavator.

I am very careful to pack well around the pins, and always put a surplus in the center of plates, so in closing the flask it will spread and press out air bubbles. I boil after packing, and close the flask, but cut no escapes for surplus as for rubber.

I am acquainted with a dentist who has used gutta-percha for ten years with marked success. He closes the flask, after heating over an oil stove, and results seem the same as when boiled. I consider gutta-percha much superior to rubber for dentures, and patients who have used both say they will never have rubber again. It seems to act better on the mucous mem-

brane, is stronger, wears smoother, has a better taste, and I get two dollars more a plate for it than rubber.

I have never had to repair a plate, but have done so for practice and experiment.

Otis Trotter, Hillsboro, Ill.

Question 239. *How can I reduce the yellow of a Logan crown to approach the shade of the natural teeth? The patient says there is too much yellow in the tooth, and everybody notices it. I have used disks and wheel in engine, but have not succeeded. If I have to remove the crown—cement—what is the best method?*

The grinding would injure the appearance of the crown, and the shade would not be improved, even if quite a surface was removed.

If the root was much decayed before inserting the crown, and adjacent teeth are not too close, the pin can be cut with a fine saw, providing the crown does not extend far under the gum and the cement can be easily removed from around the pin. If the root is in a healthy condition, was not decayed, and crown was properly attached, it would be impossible to remove pin without drilling it out, and this, in some locations is quite difficult.

Cut away crown with corundum disks, grind from crown down to pin with thin disk, and then a little grinding on palatal and buccal surface will form a groove that will allow the splitting of crown and removal from pin. Shape fine and attach to it a Bonwill crown.

Question 240. *Patient has been wearing full upper vulcanite plate for over six months; has flat arch; the fit seems perfect in every respect, allowing mastication of food with no trouble, but he cannot hold cigars without plate dropping. Can any one give the cause and suggest a remedy?*

We are often unable to obtain answers to questions on account of a failure to place them clearly, and some can not be answered without seeing the case. This is one of the latter. Very few can hold a cigar between teeth of full upper and lower dentures unless the mouth is particularly well shaped for the purpose, and even then it can be held only by certain teeth.

[Better let this work out to your wife. How graceful she would look?
—Ed. ITEMS.]

If mastication, appearance and fit are good we think your duty ceases. Short teeth placed well under the ridge will hold a cigar at times without very strong suction, but conditions often interdict this use of them. Let your patient support his cigar with lips and fingers, or make him an extra smoking set.

[Or let your wife smoke for you.—Ed. ITEMS].

SILVER OR SURGICAL DRESSING.—Dr. Welch, the bacteriologist, has demonstrated that germs will not grow in the immediate vicinity of silver. His discovery is made use of in the dressing of aseptic surgical wounds by placing silver foil immediately in contact with the closed incision in sheets about four inches square. The other aseptic dressings are then applied.

Exchange.

PRACTICAL POINTS.

By Mrs. J. M. Walker, Bay St. Louis, Mississippi.

Truing Carborundum Wheels.—An old three-cornered file, held with a steady hand, close to the wheel while it is revolving very rapidly in the dental engine, will make it true, and also cut much more rapidly. Try it. *E. B. Edgers, D.D.S.*

Piano Wire Broaches.—Cut three inch lengths from piano wire of proper size for a broach. File down as fine as possible, and holding against corundum wheel in the lathe with a flat piece of cork, dress down as fine as desired. This gives a broach of just the right temper, and better for removing nerves and wiping out root canals with a few fibers of cotton twisted on, than any that can be bought. *E. Aiston, D.D.S.*

Combination Filling Amalgam and Oxiphosphate.—Having dam and matrix in place, and cavity prepared, add to amalgam filings made plastic with mercury, one-fourth to one-third as much phosphate cement powder. Grind in mortar to a dry powder. Place on glass slab, add liquid, make into a soft ball and place in cavity quickly. It withstands wear better than tin; is not porous; does not disintegrate at gum margin; is unshrinkable; does not stain, and adheres well to cavity walls. *C. W. Strang.*

Homostatic Mixture.—Antipyrin in powder added to the alcoholic solution of tannin forms a sticky, gummy mass which, applied on cotton or sponge, arrests hemorrhage effectually.

D. R. Park.

To Cleanse and Polish Instrument Points.—To a piece of seamless brass tubing one and a-half inches inside diameter and three inches long, fit a tight cover of tin or copper at one end, and in the other end solder a bottom of heavy brass, to the center of which has been fastened a nut that will screw on to the lathe head. Put your excavator points, etc., in the cylinder with about two teaspoonsful of the finest flour of emery; screw to the lathe and run at good speed till all rust spots are removed. Empty and wipe out the cylinder and put in one teaspoonful of crocus, two of clean sawdust, a little olive oil and the points. Run again till polished to suit. Remove the points, wipe off with chamois skin and sharpen as usual. *Wm. H. Steele.*

[If the brass tube is screwed on to the lathe wabbling the motion will clean the instruments much faster. Without the wabbling there will be less motion, and therefore less friction in the tube.—ED. ITEMS.]

Treatment of Pitted Teeth.—Sandarac varnish is efficient in the repair of the pitted teeth found in the mouth of children suffering from infantile dyspepsia. Use thin enough to penetrate all the chinks and interspaces, and wash the alcohol out so as to allow it to seal up all the pitted and roughened surfaces. If faithfully applied the probability is that they will need nothing else.

Wm. H. Atkinson (1890).

To Make a Perfect Cast.—Marble dust and glycerin—about 4 ozs. glycerin to a quart of marble dust—makes a beautiful cast. I have been using it for a long time and like it better than anything else I have ever tried ; in fact, can find no fault with it.

Chas. P. Grout.

Aqua Ammonia.—Ammonia water is a good solvent for matter found within a tooth-root, or the central cavity. Before beginning to bleach a tooth use $\frac{1}{2}$ to 1 per cent of ammonia water freely, and it will render the cavity clean.

Dental Review.

Pulp Capping, Contra-indication.—There seems to be an hereditary tendency in some families on even a slight decay in a tooth for the pulp of that tooth to die. * * * Where there is an hereditary tendency to consumption the pulps will frequently die without pain, and where there is the smallest part of the pulp exposed, if you attempt to cap such pulps they will surely die.

Dr. Sitherwood.

Arsenical Paste.—One part by weight of arsenic and two of tannin, made into a thin paste by one part oil of cloves and two parts creasote. If painful, precede the application with a little cotton saturated with chloroform. Use no morphia on an exposed pulp—it is an extreme irritant to a raw surface.

T. B. Welch.

Sensitive Dentin.—For sensitive dentin Dr. Bogue uses the following : Veratrin and carbolic acid six grains each, with five drops glycerin and six minims alcohol.

Dr. Hanaford.

Putrescent Pulp.—Apply rubber-dam and disinfect putrescent contents of pulp chamber by carrying in a crystal of permanganate of potash, allowing it to dissolve before removal of pulp.

H. C. West.

Separating Rubber.—Instead of the special form made for this purpose, which gets stiff, hard and rotten, a piece of rubber-dam, twisted into a roll between thumb and fingers makes a cylinder of any size desired, and in the best form for application for separating purposes.

Dr. Chupein.

To Remove Blood-stains from Office Napkins, Towels, etc.

—Soak them in warm water to which a teaspoonful of tartaric acid has been added: no soap will be needed.

Ohio Den. Journal.

Root-canal Filling.—Iodoform, oxid of zinc and salol moistened with wood creasote. (I have promise of good results after four months' trial, but this is of too short experience to pronounce on final results.)

J. S. King.

To Retain Medicinal Applications in Proximal Cavities.—

If the tooth stands isolated, form a shell-crown of thin sheet gutta-percha, slip it over the tooth and make a hole through which the application can be introduced and sealed in. *Wm. H. Steele.*

To Retain the Rubber-dam.—Use sandarac varnish instead of the painful silk ligature. This is one of the most valuable items I have ever received, and if it has not been universally adopted it should be.

Dr. Bergstresser.

Handy Impression Compound—The "wax" on which teeth come from the dental depot, when separated from the paper between the layers, is soft enough for taking small impressions without the aid of artificial heat, and it is always ready for use.

E. H. Raffensperger.

Safe Clasps for Artificial Dentures.—To prevent decay of the clasped tooth, caused by contact of the metal, rubber clasps are not sufficiently strong. To combine the strength of gold with the protective qualities of rubber flow rubber over the inside surface of your gold clasps.

Wm. Loewenthal.

Pulp Protection.—If a little iodoform and glycerol is placed over a nearly exposed pulp and covered with asbestos paper, that again being covered with oxiphosphate, a gold filling can be inserted without danger of pulp irritation. The idea is Dr. Will Taft's, and bears the test of actual practice.

H. J. McKellops.

Platina Gold.—If we are careful to anneal it thoroughly and mallet it strongly, we can make it much harder than hammered cast gold; stronger than the gold which we put through our rolling mills, so that it will bear more stress, and in this way protect the teeth from wear.

G. V. Black.

Removal of Green-stain.—In extreme cases add one or two drops of the phosphoric acid used for cement fillings to a teaspoonful of moistened pumice. Rinse the mouth with warm water containing a little soda.

S. B. Palmer.

Cementing on a Crown.—Having root and crown ready, warm the crown and apply a thin coating of chloro-percha to the post. Adjust the crown immediately to the root, thus shaping the gutta-percha on the post as the chloroform evaporates. Remove, and when cool cement as though no gutta-percha had been applied. The crown is easily removed at any time by heating the crown, softening the sheath of gutta-percha around the post.

Geo. Evans.

Impression Material for Tooth Cusps, etc.—Pulverized pumice and glycerin mixed and kneaded into a stiff dough, and perfumed if desired, forms a mold into which molten metal can be immediately poured for a die.

H. P. Osborn.

To Clean Vulcanized Rubber from Porcelain Teeth.—Put the teeth on dry plaster powder in an iron spoon, covering them with it. Place the spoon in the fire till the plaster is red hot. Remove, and when cool the teeth will be found uninjured and as clean and stronger than when new.

Dr. Berhard.

Sargent's Improved Jackscrew.—A so-called Angle's jackscrew, complimented by a coil-spring between nut and sheath, giving continuous pressure when desired, the spring being removable at the will of the operator.

Dental Review.

A Combination Filling—Soften base plate gutta-percha and work ordinary alloy filings into it till it takes up about 30 per cent. This is unlike ordinary gutta-percha for temporary fillings.

* * *

Platina Gold.—There is no more platina gold used than there was years ago, but there is no better filling for a tooth. With that material I can beat any inlay that was ever put in, and come so near to matching the tooth that it is almost impossible to notice it at a short distance.

H. J. McKellops.

OBTAINED EXPERT ADVICE.—Talk about nerve!—A Caribou dentist tells the *Republican* that a woman came to his rooms one day, lately, and showing him an aching tooth, asked if it would come out hard. The dentist, after an inspection, replied that it would be an easy tooth to pull; whereupon the sufferer remarked: "Wall, I'm glad. A blacksmith promised to pull the tooth with a pair of pinchers; and I guess I'll let him do the job, as the tooth is comin' easy." And away she went, leaving an astonished and bewildered dentist to gaze at her in wonder, as she started for the blacksmith's shop.

Lewiston Journal.

ITEMS.

BLEACHING TEETH.—Saturate the dentin with strong sodium peroxid, followed by treatment with dilute hydrochloric acid to neutralize the alkali. Wash with hot water. *E. C. Kirk.*

* * *

Where the teeth are all gone on one side I would, to make a perfect clasp, advise the separation of the teeth, and if a considerable space was required I would, to prevent the induction of decay in the teeth, advise the extraction of one sound tooth, if necessary, to secure a firm hold for the artificial teeth. I believe this to be for the best interest of the patient in the end.

L. P. Haskell.

* * *

I have practiced very extensively in different parts of the world, principally in South America, and have had occasion to see and examine the mouths of various classes of the inhabitants of the various parts of the world, South America, Mexico, Brazil, and on the Pacific coast ; in Chili and Peru. I have found that the teeth of the lower classes, and those who lived on coarse food, were just as poor in quality and required the attention of the dentist—that is, if they would engage his services—just as much as the higher classes, who lived in different conditions and ate a better class of food, under a refined hygiene, etc.

This has led me to the conclusion that it is the quality of the teeth, and that quality has been produced by the mode of living, and that it is not owing altogether to the condition of the food.

Cosmos.

* * *

I will tell you my idea of how a thorough, an ideal dentist should be made. I would take a bright, smart boy of sixteen or seventeen years, who had very perceptible artistic and mechanical abilities, and give him the best possible education, have him graduate from some college of high standing, as Yale, Harvard, Princeton or Ann Arbor ; then I would give him as thorough a medical education as possible. I would then consider him ready for his dental education, which he would receive from the best dental college I could find. When he had graduated from this, if he had shunned evil companions and had not mingled too much with the wine when it is red, and had not crippled himself with foot ball, I believe he would be a dentist, and I believe his professional career would be a success, and that he could do much good for his fellow men.

C. W. Cox.

AIR-CHAMBERS.—If the always successful insertion of full upper plates in all materials, rubber, gold, aluminum, continuous gum, without air-chambers, lines made in the plaster cast, or other devices, does not demonstrate their uselessness, what further evidence is needed?

As a rule, it is rarely ever necessary to make any other change in the plaster model than a slight relief over the hard plate, so the plate shall not rock, as that is the only portion of the upper jaw which never changes nor yields to pressure. The plate will adhere just as well without this "relief."

I have on my shelves hundreds of models of every conceivable shape and condition of jaws, on which metal plates have thus been made successfully.

L. P. Haskell, in Cosmos.

* * *

I met a gentleman on Chestnut street one day, and he said, "By the way, won't you make an appointment for my wife? She has lost another of her fifty-dollar fillings." I did so, and filled the cavity in twenty minutes with amalgam. The original filling had required seven hours, and she was in her room for one week. The gold filling lasted four years and the amalgam has been there for seven.

The gentleman who put the fillings in, I think I can say, has been one of the experts in packing gold in the city of Philadelphia. He believed in the heroic treatment. He said he never filled with amalgam; he despised gutta-percha.

I have long ago abandoned the idea that it was my duty to punish patients by keeping them in the chair three, four, or five hours to build up an old root with gold when I could put a crown on it that would be more serviceable.

Dr. Boice.

* * *

In lower plate work, if one good lower tooth remains in the mouth it should by all means be retained as affording a good anchorage for the lower denture, no matter what tooth it is. I do not believe, however, that there is any use in retaining the upper cuspids if all the other teeth are gone, because a more successful denture can be inserted with a full plate than with a partial one of this kind. I believe dentists are very foolish in advising patients to retain upper cuspids under the idea that they tend to preserve the contour of the lips and face. This I do not believe to be the fact; on the contrary, I believe they are a source of infinite trouble to the patient and tend to weaken the upper plate.

L. P. Haskell.

EDITORIAL.

CREDITING TO OTHER JOURNALS.

Dr. L. P. Bethel, editor, in March, 1896, *Ohio Dental Journal*, page 166, complains that Mrs. Walker, in her "Practical Points," fails to give the source of her quotations. He admits she gives to each the name of the author, but thinks she should also give the name of the journal where found. Her course has been by our direction. We have stated over and over again that where only a short item is quoted we do not regard further specification necessary.

This reminds us that some time since, the following appeared in Mrs. Walker's "Points :" "Dr. Craven says abscesses may be cured by perforating its sack by a broach through the apex of the root affected." We received a private note saying we should have given credit to the *Western Dental Journal*, of the proper date, as a quotation by that journal from the *Ohio Dental Journal*. Looking it up we found that the *Ohio Dental Journal* got it from the proceedings of a dental convention. Perhaps all these sources should have been mentioned, but we did not think it necessary. Therefore, we again stated in the ITEMS that the author's name must be considered sufficient. We believe this is generally understood and satisfactory. Though friend Bethel, being a newcomer among us, we ought, perhaps, to have explained it to him and obtained his consent. Most dental journals follow our course, though some—like the *Ohio Dental Journal*—often quote the journal and ignore the author. As, for instance, turn back one leaf from where this complaint appears, and we find two such quotations. Turn back another leaf, and we find two more.

Dr. Bethel says we are similarly at fault in other parts of our journal. If the doctor refers to other than these minor clippings we should like to have him specify. Not that we are perfect; we may, sometimes, make a mistake, but we try to do justice to all.

Dr. Patterson, of the *Western Journal*, quotes the article of friend Bethel with exulting gusto, and adds in substance, if he

will allow me to abbreviate his remarks, " Go it, Bethel ; I was whipped once ! "

Gentlemen, we are heaving away with the ITEMS so fast we have hardly time to look back. Yet if you have a real complaint, halloo to us and we will try to treat you fairly.

Since writing these comments friend Bethel, in answer to a note from us, writes that he did not mean us specially (but he mentioned our name specially), but any one who did not give the double quotation of author and journal. Thank you.

HAVE A GOOD BANK ACCOUNT.

It is not so much what we earn, as what we waste and spend, that keeps us poor. The provident man will put aside something for a rainy day, let his income be ever so small.

You say there are exceptions. There may be, but not many among dentists. The fact is, we are the most profligate class of workmen in civilization. There is scarcely a man of us who does not or should not earn more than he spends. And yet, in many cases, the more we earn, the more we spend ; and, sometimes, the more we owe. Our wants so far exceed our needs, our itching to spend so anticipates our receipts, our shiftlessness and prodigality so outstrip our resources, that many of the most thrifty of us are the most severely handicapped with debts.

Because our money comes easily, it goes easily, and it comes and goes without system or accounting ; and we are only brought to our senses when we are in some financial strait.

Our only alternative is to keep strict credit and debtor account, and always keep the balance on the credit side. And it will not do to keep that balance in our pocket, nor anywhere we can easily get at it. Let it be in the bank, and spend nothing that does not come through the bank, and pay no accounts but by check on the bank. These checks are the best evidence of payment, and they give you reputation. Ah, it is a nice feeling to know you have a good bank account, and it adds to your importance.

Too poor? It is only to spend less than you earn. Very few are too poor to do that. And it is easy, if you only live within your means, however little that means may be. It is astonishing to see how little we can live on and grow fat and sleek. It is the substantials of life that nourish us; and it is the over-eating the costly and pampering delicacies that give us dyspepsia and a thin pocket-book. Even in our clothing, and that of our wife and children, and the furnishing of home and office, it is the superfluities that principally take our money. We spend more to keep up appearances, and to tickle our pride and our appetite, than for the real solid comforts of life, which give us health and happiness.

Try this bank account scheme. It will make you more industrious, more economical, and more self-reliant.

It is not good for a man to be alone. And this fact is applicable to men of business as well as to men and women in social life. Isolation brings weakness, and selfishness, and crookedness; and these bring blindness, and egotism, and failure. What is a man without a family? What is a family at odds with the community? And what is a dentist without professional association? The business man cannot have the same love for his work that a bounding boy has for his sweetheart, or as the true husband has for his wife, but if he has not a love that makes his profession his commune, and himself an integrant part of it, he will soon imagine himself too good for his company; which, being interpreted, means his company is too good for him. He has chosen isolation, and isolation shall be his ruin.

Many are always wanting to do some great thing, but the experience of those who have attained greatness proves that it is doing well and cheerfully the work of each day that makes greatness possible.

WORKING BY RULE.

It would, perhaps, be misleading to say the dentist cannot work by rule. Yet that dentist who works only by rule, or chiefly, must be frequently confounded. He, like the physician, must approach each case from a special standpoint, and judge and treat it as a new, and perhaps an isolated one, forming his opinion and adapting his services according to its peculiar needs and aspects, the temperament, health and habitude of the patient, the special group of symptoms presenting, and its cause, tendencies and liabilities. This is necessary, for each case will differ from all others. Even a toothache will have its individual cause, symptoms and special diagnosis, and therefore must have its independent and unusual treatment. Exceptions to the rule will become the rule, and isolated cases will be of common occurrence.

Meditation is quite as important as action. Careful thinking saves many a false step, and much vexation and loss. Most of us make our heels do what our head should have made unnecessary. "I didn't think" is no defense for most blunders and failures. Little work, well planned and thoughtfully done, may be more profitable than much work done headlessly; for it is not so much the quantity as the quality of our work that determines results; and quality is determined by the amount of brains we put in it. The thoughtless farmer may work hard and have little, while his neighbor, who plans wisely and executes with discretion, has fine crops. So with us professional men. The one of calm reflection and mature planning has done half his day's work when he begins it, while the superficial thinker commences, continues, and ends his day in uncertainty, worry, and perhaps disappointment.

The Microscope gives this formula for an ink for writing on glass with a pen, as with ordinary ink: Bleached shellac 10 parts, Venice turpentine 5 parts, lampblack 5 parts. Dissolve the shellac with turpentine and stir in lampblack.

HINTS.

Dr. Geo. W. Cool says he uses, with satisfaction, copper cylinder points, in the dental engine, in connection with corundum or carborundum and turpentine, for drilling cavities in artificial teeth. He says they cut rapidly, and it requires only a few moments to form a cavity.

* * *

First soak a corundum wheel in alcohol for a short time and you can true it easily.

If the wheel is worn to a very uneven surface, you can easily true one side by softening the wheel in hot water and then pressing it against glass or any smooth surface.

* * *

Dr. Rohland, of Alton, Ill., does not like the use of any of the strong acids for the removal of green-stain. He very properly says they not only remove the stain but often the enamel too. Better, he says, dry the tooth, paint the stain with iodin, and polish with pumice moistened with pyrozone.

* * *

A NEW PROOF THAT NERVES RAMIFY THE TOOTH.—In the use of cocaine its application to an inflamed surface either of enamel or dentin of a tooth has but slight effect; but if an injection of 4 to 10 per cent is made in the muscle supplying the pulp with nerves and blood-vessels, a benumbness is felt throughout the whole tooth. If there are no nerve-filaments in the dentin, how is it the whole substance of the tooth becomes anesthetized?

* * *

A dull, stupid, dreamy manner, and a coarse, morose, sour countenance, are repulsive, and show an addled head and a cold nature. Such people get on slowly, and are in little demand. But a bright, active, prompt demeanor, and a cheerful, open countenance, show crisp, sharp, mature thoughts and a ready, exact skill, which are a passport to the best society and to the most pleasant and profitable positions.

* * *

The *Lancet* of September 21st contains an interesting leading article on some of the disclosures contained in the second Blue Book of England on the Food Products Adulteration Committee. It recalls with pardonable pride the part it took, under the direction of the late Mr. Wakley, in obtaining the Act of 1875. Unfortunately, this Act left untouched manufacturers and wholesale

dealers, and threw the onus of adulteration solely on the shoulders of the retailer. That this is an error, and a grievous one, is at once apparent when we read that it was possible in one notorious case to offer and dispose of by public auction in Mincing Lane, 70,000 lbs. of pepper dust, which really consisted of 1 per cent. of pepper and 99 per cent. of sand and clay.

* * *

If you want to be miserable, have a better opinion of yourself than others have of you; be anxious to occupy the position of some one above you, and be envious of those about you who are praised more than you are. Dwell on many things that you want which you do not possess, and of what you like that you can not reach. Especially, let your mind be disturbed by the want of respect with which people treat you, of the deference they should show you. The more you feel these neglects, and magnify your importance, the more miserable you will be able to feel.

* * *

FITTING CROWNS.—Dr. Bryan, in the *International*, gives the following method of preparing an opaque black wax for articulating crowns. One part by bulk of lamp black and five parts white or yellow wax are mixed together and rolled into sticks. The crown and root being ground to fit proximately, a small piece of this wax warmed is placed around the pin and the crown placed in position. The points requiring grinding will be accurately indicated. The amount to be removed being estimated by "sounding" the wax with a fine point.

* * *

It is well that we have such a variety of our dental magazines. A dentist can hardly fail to be pleased with some of them. And this is a comparatively new feature. Twenty years ago they all seemed fitted to the same groove. Their similarity was marked. Gradually they have become distinctive. It is, therefore, well for every dentist to take at least two or three, for he is almost sure to find something specially interesting in one that he will not find in another. Passing from one to the other will be like entering a new literary world.

* * *

A NEW POWERFUL AID IN DIAGNOSIS.—An improvement in photographic apparatus has been devised which astonishes the scientific world with its asserted possibilities. Electricity is the agent doing the work. It has the power of photographing through solid opaque materials (as wood, clothing, walls, etc.) and revealing clearly what is behind them. Light has no effect in this pro-

cess, as it will not photograph through clear glass. A photograph of a person by this method may be made to reveal only his skeleton, or the various internal organs, according to the length of time of the exposure. By this means the stethoscope will be rendered unnecessary, and bullets, tumors, various diseased conditions and anatomical lesions may be accurately located and closely inspected. It looks as if a new science has been born.

* * *

More become wrecks from thoughtlessness and carelessness than by deliberate purpose. We do not sufficiently weigh the tendencies of little things, foolish beginnings, comparatively innocent acts, leading to that which is worse. We may have no hesitancy in pronouncing a confirmed habit bad, but the trifling tendencies that have gradually led up to it, and which have gradually bound it on us, we speak of lightly. Thus we do not sufficiently consider that the first steps in a course should be as carefully avoided as the habit they bring about.

* * *

A SUBSTITUTE FOR BRASS.—The Pittsburg Reduction Company is said to be bringing out a new alloy containing somewhat over 70 per cent of aluminum, which is claimed to be a practical substitute for brass. It casts well, has a specific gravity of 3.15 and a tensile strength of 30,000 pounds. It works quite well in the lathe, polishes and retains the polish. The color is white. The alloy weighing about one-third as much as brass, corresponds in costs to brass at about nine cents per pound.

* * *

ANTI-TOXIN FOR DIPHTHERIA.—Physicians and parents have been brought face to face with the necessity for making a strange choice in Burlington, Iowa. Two little sisters were sick with diphtheria. The Chicago and St. Louis Boards of Health were appealed to, but anti-toxin sufficient for only one treatment could be obtained. This meant life for one child and death for the other. The relatives shrank from the choice, and the physicians made application of the remedy to the child most critically ill. It lives. The other is dead.

* * *

“I have no time,” oftener comes from men of comparative leisure than from those of extensive business. The more we have to do the more we can do, because, when busy, we naturally, and from necessity and habit, eliminate the unimportant and more highly prize the odd minutes and opportunities that every man

has, and acquire greater system and better methods. It is a nice discipline, therefore, to have more than we can do. We shall be surprised, if the necessity is on us, to see how easily we can do two days' work in one; how quickly and easily we can dispatch one business and turn to another, and how much better everything is done. We need leisure and pleasure, but woe to that man who makes either a means of dissipation. It is sure to end in enervation and demoralization.

* * *

A SUBSTITUTE FOR GOLD.—Mention is made in the *Scientific American*, December 21st, of a new and promising substitute for gold. It is produced by alloying 94 parts of copper with 6 of antimony, the copper being first melted and the antimony added afterward; to this a quantity of magnesium carbonate is added to increase its specific gravity. The alloy is capable of being drawn out, wrought and soldered just as gold is, and is said to take and retain as fine a polish as gold. It costs about 25 cents per pound.

* * *

In curing the toothache it must not only be put to sleep by an anesthetic or opiate, but constricted or shrunken up by an astringent. Pain in all the organs and tissues is caused by pressure on some nerve. This pressure is caused generally by some obstruction in the blood circulation. In the toothache reduce inflammation and you reduce the pain; for inflammation means expansion, and as the walls of the pulp chamber will not allow of this expansion, we must not only prevent the swelling of the pulp, but cause the shrinking of its blood-vessels and circulation. Tannin moistened with creasote and oil of cloves and cinnamon will do it. First applying chloroform is an improvement.

* * *

Every detail of what we do goes to make up the character of what we are. What we do carelessly, thoughtlessly and aimlessly goes to make up a careless, thoughtless, useless man; so what we do carefully and thoughtfully goes to make up a precise, skilful, useful man. In other words, we make of ourselves what we are by what we do. We are bundles of habits, and these habits are acts strung on cords of repetition. We can make for ourselves an undesirable character by simply doing nothing, though we can hasten the process by taking on acts that are worse than nothing—positively bad—though, of course, we must at first sugar-coat them; then we can just go rushing to destruction. It is astonishing to see how soon these little evil acts will become cords to pull us on.

FOR OUR PATIENTS.

We shape ourselves, the joy or fear
Of which our coming life is made;
And fill our future's atmosphere
With sunshine or with shade.
The tissues of the life to be,
We weave in colors all our own;
And in the field of destiny
We reap as we have sown.

All that by mortal can be done
A mother ventures for her son;
If marked by worth and merit high,
Her bosom beats with ecstasy;
And though he own not worth nor charm,
To him her faithful heart is warm.
Though wayward passions round him close
And fame and fortune prove his foes;
Through every change of good and ill,
Unchanged a mother loves him still.

FAULT-FINDING.

A single pithy quotation which many of us would do well to print in gilt letters and tack in the most conspicuous part of our very own apartment is: "Strive to learn the hard lesson of admiring rather than criticising." To find fault seems so much easier than to praise. The husband grumbles at the luke-warm, muddy coffee on Monday morning, but forgets to praise the excellence of the clear, strong, smoking-hot beverage on the six other days in the week. The mistress tells the maid of the undusted chair, but does not notice the shining glass and silver. The school-teacher condemns the blotted copy, and passes by without mention the correct example in arithmetic. The mother, at her work, calls impatiently to her boys when a door is slammed, and bids them "be quiet," never giving a thought to the silence that has reigned in the house for the past hour, during which time quiet plays have been the rule in the nursery, so that "dear mamma" will not be disturbed. After the harsh word has been uttered it is too late to make it as if it had not been. Salve may soothe a wound, but it does not banish all pain and smooth away the scar. While to repress the indignant sentence of disapproval may cause an actual struggle with inclination and temper, this struggle does not leave behind it the poignant pain that does the memory of our hasty criticism and our tardy praise.

SOLIDIFIED GELATIN—A NEW AND USEFUL PRODUCT.

Gelatin possesses the curious property of becoming insoluble in contact with formic aldehyd, and, at the same time, of preserving perfect transparency. Gelatin thus rendered insoluble resists water, acids and alkalies, and resembles celluloid, but has the great advantage over the latter of not being inflammable. Thus a new product, easy to obtain and possessing properties which will strongly recommend its use in the arts. The gelatin is the ordinary article of commerce, while the formic aldehyd is what is known as "gormol," "formalin" and "tannalin." The commercial product is a 40 per cent solution of formic aldehyd in water, and is a colorless, syrupy liquid, of a pungent odor, whose vapor is not inflammable. It is also a powerful antiseptic. To obtain molds of statues, etc., for example, two pounds of good white gelatin are steeped in a quart of water over night, when the whole is melted over a water-bath. The mold, which may be of plaster, clay or metal, having been prepared, the formic aldehyd is poured into the melted and slightly-cooled gelatin, the whole is then well stirred to obtain a homogeneous mixture, and then poured into the mold and allowed to cool. After the object is taken from the mold it is finished by immersing in, or, if too large, painted with a concentrated solution of formic aldehyd. Objects thus made are transparent and resemble glass. Beautiful imitations of white marble may be obtained by previously adding to the gelatin some finely sifted zinc white, mixed with a little water and alcohol. By mixing the oxid of zinc with appropriate colors, objects of all shades may be obtained, and, by properly arranging the colors, veins, strie, spots, etc., may be produced. The solidified gelatin may be used for imitating mother-of-pearl, tortoise shell, amber, coral, etc., and for the manufacture of toys and artificial flowers.

Scientific American.

Buyology.—How to get bargains at sales.

Electro-Buyology.—How to purchase the best substitute for silver.

Comparative Fiziology.—Moselle after champagne.

Fillology.—How to make a good dinner.

(In)toxicology.—How to find your way to a police station.

Pathology.—How to find your way when four roads meet.

Students' Journal.

THE MIRACLE WORKING RAYS.

The achievements of the cathode rays grow daily more and more marvelous since the announcement of Prof. Röentgen's great discovery. He called them X rays. Dr. Neusserr, Professor of Medicine in the Vienna University, has showed that it is possible to determine by photographs taken under Röentgen's system the presence and position of calcareous deposits in the bladder, liver and kidneys. Prof. Exner, also of Vienna, showed that these rays could be transmitted through a pack of playing cards or through a book of 1,000 pages.

What are these cathode rays?

First, then, they are not light; at least, not what we call light; because they are not visible, and are not refracted (bent) when passing from a thinner into a denser medium—as light is when passing from air into water. Neither have these rays the properties which belong to the electric current. They are produced by electricity and for some purposes act as a substitute for light, and that is about all that any one seems to know.

The word "cathode" is corrupted from *kathode* (Greek *kata hodos*), meaning downward way, and is applied to the negative pole of a galvanic battery. The positive pole is called the anode, or upward way. The manner of producing the cathode rays is thus described in the *Medical Record*:

A glass tube, whose interior is as nearly a complete vacuum as possible, is made luminous by the passage of an electric current, the cathode or negative pole of the current being the one which brings out the luminosity. This luminous vacuum contains an especial kind of light which has the property of passing through some opaque bodies, but not through others.

Prof. Edwin H. Hall, of Cambridge, Mass., writing in the *New York Sun*, gives the following list of what he says appear to be the observed facts with regard to these rays:

(a) That the so-called rays are sent out from the cathode of a vacuum tube, excited by a powerful alternating or rapidly interrupted current of electricity.

(b) That these "rays" act readily through wood and flesh, less readily through metals, except the lightest of metals, aluminum, and hardly at all through ordinary glass.

(c) That the "rays" are not perceptibly reflected or refracted.

(d) That a medium, a solution of iodin, which absorbs the short ultraviolet rays, does not allow the Röentgen influence to pass, and a medium, a solution of alum, which absorbs long waves, does allow the Röentgen influence to pass. This is from Mr. Swinton, an English experimenter.

(e) That the "rays" are not affected by the magnet. Witness.

THE MEASURE OF POWER.

Perhaps the greatest difference between men is to be found in the varying degrees of the capacity for growth. Some men attain their full growth early and never seem to expand afterward; others are constantly developing up to the very last hour of life. If the power of growth in a man could be measured, his career could be predicted to a nicety; but this power never can be measured, and it is therefore the uncertain element in every man's life. There are a great many young men of promise who never fulfill the pledges of their youth for the reason that they lack this capacity; there are other men who give very slight promise of great powers, but who come at last to great influence and position because they possess this capacity. Capacity for growth is not only the measure of a man's essential power, but it also lends a supreme interest to life. The growing man learns something from everything that he sees, does or hears. Nothing can touch him which does not teach him. The heaviest burdens do not crush him, because he gets something out of them which compensates for the weight. The greatest sorrows do not overwhelm him, because they impart to him a strength which is greater than grief. The most brilliant successes do not disturb his poise, because he measures them aright. The varying and endless experience of life never becomes monotonous to a man with this capacity. On the contrary, it is as replete with unfailing interest as the pages of a book which one constantly turns with keen anticipation. The power to grow is fed by nothing so much as keeping one's mind open to every possible suggestion from every possible source. Those who are satisfied with themselves and their attainments, or those who care more for themselves than for excellence, lose a great part of growth because they are stung by criticism instead of being made intelligent by it, and they shut themselves off from a thousand hints by resting content with their present achievements. Those who love excellence supremely are glad of criticism, even when it hurts, and those who care more for their work than for their self-love are happy to exchange the plan which they had cherished most dearly for the sake of the new plan which promises greater results. To surrender one's self to the education of life is to receive and to give in the largest measure.

The Outlook.

A ten per cent solution of boro-glycerin in water will sterilize forceps, broaches and cutting instruments, and leave them without unpleasant odor.

A. W. Harlan.

DOCTORED HIS OWN TOOTH.

"While traveling in Southern Oregon a few months ago," said Attorney W. W. McNair, "I saw a beautiful piece of dental surgery. A teamster developed a toothache while on the road. He thought it would soon be better, but it kept getting worse and worse, till he could hardly handle the reins. He put a chew of tobacco on it, but it only jumped the harder. Then he stopped his team, built a little fire, heated a needle red hot, and had another teamster jam it down into the cavity to kill the nerve. Still it jumped and thumped till the poor fellow was pretty nearly insane.

"'Boys, she's got to come out,' he shouted to his companions, as he pulled up his team.

"They all stopped, wound their lines around their brakes and climbed down.

"'How can we get her out?' asked one of them.

"'I don't know,' groaned the victim, 'but she's got to come.'

"He opened the jockey box on his seat and rummaged around in it, finally producing a small hatchet and a big nail.

"'I guess you'll have to drive her out with this,' said he, and he sat down on the ground and hung on to a buckeye bush with both hands, while one of his companions placed the end of the nail against the side of the tooth and hit it with the hatchet. The first lick made the teamster jump and yell, but he settled down for another one. The second stroke loosened it up, and after a lot of groaning the teamster wiped the perspiration off his face, climbed on to the buckeye and said :

"'Hit her again, boys.'

"The third lick sent the offending molar flying."

San Francisco Post.

A very gratifying tendency has marked the development of the medical profession in the last generation. The slough of mannerisms, the formal dress, the owl-like solemnity, have been thrown off, and the physician, by his own choice, is being judged more by his actual attainments than by external appearances. Thirty years ago a bald head, a white beard and a long frock-coat were as much a part of a physician's equipment as his diploma. Now, it is no infrequent occurrence for an elderly man of real ability, and modern in his methods of practice, to lose a patient through the fear that he may not be fully abreast of the times.

NOTICES.

The Florida State Dental Society will hold its thirteenth annual convention in Jacksonville, Florida, May 12th to 15th, inclusive. We hope each member will be present or give a reasonable excuse for his absence, and that each member will exert himself in making this one of the most interesting and profitable meetings in the history of the society.

F. B. Hannah, President.

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Inter-State Dental Meeting, Excelsior Springs, Mo., June 23d to 26th, 1896. Iowa, Nebraska, Kansas and Missouri. This meeting is expected to be the best ever held in these Western States. You are cordially invited to attend. Bring that new appliance with you, and should it happen that you cannot attend, send it to J. H. Kennerly, 303 N. Grand avenue, St. Louis, with full instructions. He will take pleasure in exhibiting it, and will return it at the close of the meeting.

H. H. Sullivan, Rec. Secretary.

* * *

The next meeting of the Tennessee Dental Association will be held in Nashville, Tenn., beginning on the 5th day of May next, and continuing three or four days. Dr. B. D. Brabson, President, Knoxville, Tenn.; Dr. P. D. Houston, Recording Secretary, Lewisburg, Tenn.; Profs. J. Y. Crawford, D. R. Stubblefield and J. A. Dale, Executive Committee, of Nashville, Tenn.

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The South Carolina State Dental Association will hold its twenty-sixth annual meeting at Columbia, S. C., on May 12th, 1896, by order of President B. Rutledge.

R. Atmar Smith, Rec. Sec.

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The second annual meeting of the Southern Wisconsin Dental Society will meet at Platteville, Wis., on the first Wednesday and Thursday (the 6th and 7th) of May, 1896. All dentists legally qualified to practice are eligible to membership without examination.

J. H. Reed, Secretary.

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CATCHING'S COMPENDIUM OF PRACTICAL DENTISTRY FOR 1895.

This volume is still more complete than its predecessors. It is really a digest of current dental literature, gleaned from all the dental magazines for the year. A dentist can hardly fail to be interested and instructed by reading it. By adding a new department—Dental Science—the price this year is \$3.00.